

Heat recovery unit series

maxi 802 - maxi 6002

Installation and maintenance



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Operating Instructions
Please keep careful!



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Appendix 1:
ADVANCED SETUP TAC4 DG

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ADVANCED SETUP on the screens of remote graphic control GRC

Appendix 3:
Installation control datasheet (to be filled in after starting the installation)

Attachments:

Technical Data maxi 802
Technical Data maxi 1202
Technical Data maxi 2002
Technical Data maxi 3002
Technical Data maxi 4002
Technical Data maxi 5002
Technical Data maxi 6002
Check List A Maintenance Works of the User
Check List B Maintenance Works of qualified Personnel
Air Flow Report
Commissioning and Handover Certificate
CE Declaration of Conformity maxi 802 - maxi 6002

0 Preamble

*PLEASE READ THIS MANUAL CAREFULLY BEFORE INASTLLATION AND COMMISSIONING!
THIS MANUAL HAS BEEN MADE WITH GREATEST CARE.*

*HOWEVER, NO RIGHTS CAN BE DERIVED THEREFROM. WE RESERVE THE RIGHT AT ANY TIME
TO PARTIALLY OR ENTIRELY CHANGE THE CONTENT OF THIS MANUAL WITHOUT PRIOR
NOTICE.*

This manual contains all the best for an assembly plant and a heat recovery unit (HRU) necessary information.

The manual also serves as a handbook for installation, maintenance and customer service work. We recommend that any intervention in the appliance installation company should be consulted.

Subject of this operating manual is the heat recovery unit series maxi in different design variants. Possible accessories are only described insofar as it is necessary for the appropriate operation. Please see the particular manuals for further information on accessories.

If you have any questions that have not been answered or have not been sufficiently answered in this documentation, please contact the company Paul Wärmerückgewinnung GmbH. We will be glad to help you.

1 Introduction

1.1 Warranty and Liability

1.1.1 General Information

Our "general terms and conditions" apply for the maxi in the currently valid version. The warranty is aligned with the warranty terms of the manufacturer. This applies to mere replacement of the material and does not include the services. They apply only in case of proof of the performed maintenance according to our regulations by a skilled installer.

1.1.2 Warrant Terms

The warranty period for our MVHR devices is two years as of delivery from our factory. Warranty claims can be asserted exclusively for material and/or construction defects, which occurred during the warranty period. In the event of a warranty claim, the maxi may not be demounted without prior permission of the manufacturer in writing. The manufacturer grants the warranty for spare parts only when they were installed by a skilled installer.

The warranty shall expire once/ when:

- the warranty period has elapsed;
- the device is operated without original Paul-filters;
- parts are installed which were not delivered by the manufacturer;
- the device is improperly used;
- the defects occur due to incorrect connection, improper use or soiling of the system;
- unauthorised changes or modifications on the plant are made.
- The data control sheet (see Appendix) was not completed properly and in case of damage is not available.

1.1.3 Conformity

CE, under formal condition that the final product integration is made in conformity with the applicable standards.

1.1.4 Liability

The maxi device was developed and manufactured for use in so-called comfort ventilation systems. Any other use is considered as "improper use" and can result in damages to the maxi device or in personal

injuries, for which the manufacturer cannot be made liable. The manufacturer is not liable for any damage, which is due to the following causes:

- Non-observance of the notes on safety, operation and maintenance, stated in this manual;
- The installation was not performed according to the regulations;
- Mounting of the spare parts, which were not delivered and prescribed by the manufacturer;
- The defects occur due to incorrect connection, improper use or soiling of the system;
- The warranty period has elapsed;
- Normal wear.

1.2 Safety

Please always observe the safety instructions in this operating manual. The non-observance of the safety instructions, warning notices, notes and instructions can lead to injuries or damages to the maxi.

- Unless otherwise stated in this operating manual, only an authorised installer is entitled to install, connect, put into operation and maintain the maxi;
- The installation of the maxi is to be performed according to the general local building, safety and installation instructions of the corresponding local authorities, of the water works and electric works and other official regulations and directives;
- Always follow the safety instructions, warning notices, notes and instructions described in this operating manual;
- Please keep this manual during the complete life time of the maxi in proximity to the device;
- The instructions for the regular replacement of the filters or the cleaning of the supply and exhaust air valves are to be strictly followed;
- The specifications stated in this document may not be changed;
- Any modification of the maxi is prohibited;
- In order to guarantee that the device will be regularly controlled, it is recommended to conclude a maintenance contract. Your supplier can give you the addresses of authorised installers in your area.

1.2.1 Used Symbols

The following symbols are used in this manual:



Caution, special note!



Risk of:

- ***injury of the user or the installer***
- ***damages to the device***
- ***impairment of the operation of the device if the instructions are not carried out properly***

2 GENERAL MAINTENANCE INSTRUCTIONS

2.1 Construction characteristics

The structure is made out of omega shaped anodized aluminum profiles connected by reinforced polypropylene auto-extinguishable (M1) corner pieces. The panels are 30mm double skin steel plates insulated. The outside panels are 0,8mm thick pre-painted (5µm primer + 20µm polyester)-gray RAL 9002 color, covered with a plastic protection (to be removed after installation). The inside panel is 0,8mm galvanized steel. This combination allows the exposure of the panels to outdoors conditions, and forms a rigid structure. Thermal insulation is carried out by EPS panels (density 30 g/l), self-extinguishing (M1 class), in conformity with the European environment standards, inserted between layers. The HR global is mounted on a steel frame and is mono-structured. All the access doors to the ventilators and filters are equipped with handles.

Air tightness:

Internal: Class 1 as per EN 13141-7.

External: Class 2 as per EN 13141-7.

2.2 TAC technology fans

The maxi series is equipped with TAC technology centrifugal ventilators. The TAC4 DG control is specifically developed to take advantage of this technology. Verify that the supplied voltage corresponds to the specification of the ventilators and that the connection is made according to the supplied wiring instructions



The starting up / stopping of the unit must be activated by using the softstop function on K1/K2/K3 or via the RC/GRC/MODBUS, and not by shutting off the power supply..

Always check the following electrical specifications:

Power supply voltage: 230VAC (210V<V<250V).

Power supply frequency: 50/60 Hz.



Grounding the unit is compulsory!

The motor is self-protected against overloading. It is thus NOT necessary to install an electrical overload protection device. See section 3.2 for detailed wiring instructions.

Insulation class

Fans / unit: IP 44

RC TAC4 REC: IP 20

Nominal temperatures: -10 °C / + 55° C

Conformity: CE (motors are also UL approved).



Before starting the unit

- If the fan wheel is rotating properly, without resistance?
- Verify if the installation and the connections are made according to the applicable European standards.
- Are the precautionary measures to avoid an accident taken? (Wiring, rotating parts, security measures,)



Operating conditions

The temperature over the fan motor cannot be lower than -10°C, or superior to 55°C. The unit is not designed to operate in an aggressive or an explosive environment. It is strongly not advised to stop and start the unit more often than every 5 minutes.

2.3 About the counterflow AIR/AIR heat exchanger

Protect the heat exchanger by regularly cleaning or replacing the filters.

To protect from frosting, the TAC4 DG control is as standard delivered with an inbuilt heat exchanger antifreeze system (by unbalancing the in and out airflows). There is also the KWin pre-heater option available to accomplish this if deemed necessary.

The maxi units are specified not to exceed a frontal air speed on the heat exchanger of 2,2 m/s.

2.4 Filters

Maxi units are delivered with G4 filters for the air 'out' flow and F7 filters for the air 'in' flow. Filters are the protectors of the heat exchanger, but also of the quality of the air you breathe. Check regularly (once a month) the state of the filters. Vacuum the filters if necessary, and replace them when they are too dirty. Clogged filters can create the following failures:

- Insufficient ventilation
- Excessive increase of the rotation speed of the fan creating excessive noise and power consumption
- A damaged filter allows 'dirty' air to enter the heat exchanger which will eventually clog the heat exchanger

Filter identification for replacement:

Unit type	Filter(s) air “out”	Filter(s) air “in”
maxi 802	1 x G4 (470x287x50) – cid 528006320	1 x F7 (470x287x50) – cid 528006310
maxi 1202	1 x G4 (830x287x50) – cid 528006340	1 x F7 (830x287x50) – cid 528006330
maxi 2002	2 x G4 (503x370x50) – cid 528006730	2 x F7 (503x370x50) – cid 528006720
maxi 3002	1 x G4 (503x370x50) – cid 528006730 2 x G4 (436x370x50) – cid 528006750	1 x F7 (503x370x50) – cid 528006720 2 x F7 (436x370x50) – cid 528006740
maxi 4002	4 x G4 (436x370x50) – cid 528006750	4 x F7 (436x370x50) – cid 528006740
maxi 5002	5 x G4 (503x370x50) – cid 125063	5 x F7 (503x370x50) – cid 125062
maxi 6002	5 x G4 (503x370x50) – cid 125063	5 x F7 (503x370x50) – cid 125062

2.5 Installation control datasheet (see appendix)

When the installation is completed and running, we strongly advise that the installer fills in the installation datasheet recapitulating all the data useful for maintenance of the installation. Please keep a copy of this datasheet closely as it may come handy for many reasons:

- make a clear communication in case of discussion with the manufacturer
- information if you need to change parameters when necessary
- this document can become an important factor in case of guarantee issues.

3 INSTALLATION INSTRUCTIONS

3.1 Installing the unit

The maxi series is delivered with a base frame and in one piece (no assembly required).

The frame must not be removed, it is important for the rigidity of the unit. The base frame is designed to allow manipulation of the unit.

- Make sure the unit is installed on a flat surface.
- Make sure to allow accessibility to all the cabinet's components (controller, fans, heat exchanger, filters) to allow easy maintenance, and possible replacement of defective elements. We recommend a minimum clearance distance of 60 cm on the access side of the maxi 2002/3002/4002/5002/6002, and of 95 cm on the access side of the maxi 1202 models. A clearance of 50 cm is recommended for all the 3 other sides.
- Special care has been taken to deliver an airtight unit. Make sure the ductwork is also very airtight, especially at the connections with the unit on the supply air side.
- If the unit is installed outdoors, take the dominating winds into account when orientating the unit. Try to protect the air inlet as much as possible from storm winds and rain.

3.2 Connecting the drain pan

To insure a good flow of the condensates the unit should be slightly inclined (2°) in the direction of the water flow. This also avoids water stagnation in the drain pan. The siphon must be properly installed to allow good water flow.



If the maxi unit is installed indoors:

- if the drain pan is watertight;
- the connection between the drain pan and the evacuation pipe is airtight;
- the height of the siphon is at least of 120 mm;
- the pressure difference between outside and inside the unit cannot exceed 350 Pa;
- check for the presence of a ventilation downstream of the siphon;
- the slope of the evacuation pipes is at least 1 cm/m;
- der Siphon muss für Reinigungszwecke zugänglich sein. the siphon is accessible to allow cleaning



indoor siphon



If the maxi unit is installed outdoors:

The siphon delivered with maxi for outdoor application is a special siphon with a membrane. It is thus not necessary to fit it to a drainage pipe as the water can directly drop on the ground. The membrane integrated into this type of siphon creates the air tightness.

- In case of frost risk a wire heating coil should be installed (not delivered)
- Once drainage system is in place make a water flow test, adjust inclination if necessary.



outdoor siphon

3.3 How to assemble the roof (VEX option)

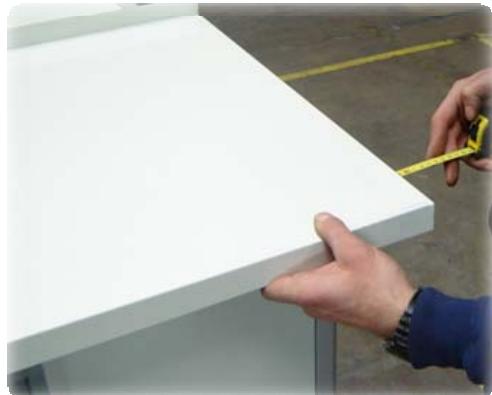
The roof (VEX) option is delivered unassembled for transportation reasons. Please follow these instructions to assemble the different parts:

- a) Remove the plastic film from the top part of the maxi unit. Make a silicone seal (not supplied) between the panels and between the aluminum profiles on the top part of the unit, as shown on the picture a)

b) Place the different elements of the roof on top of the maxi unit, over the silicone seals. Make sure you leave an adequate distance on each side of the unit so as to cover the whole unit properly. (Suggested distance: +/-50mm on the sides, and +/-100mm on the front and back of the maxi).



a)



b)

c) Use the supplied M8 screws to screw the roof onto the maxi unit. The screws must be screwed into the aluminum profile and properly aligned. Use a pen to point the location of the screw. Mount the plastic caps supplied over the screw heads.

d) Insert silicone inside the U-clip used to join the different roof parts and place the clip over the roof sections as shown on picture d1 and d2.



c)



d1)

e) Make a silicone seal between the aluminum profile and the roof all around the unit, as shown in picture e).



d2)

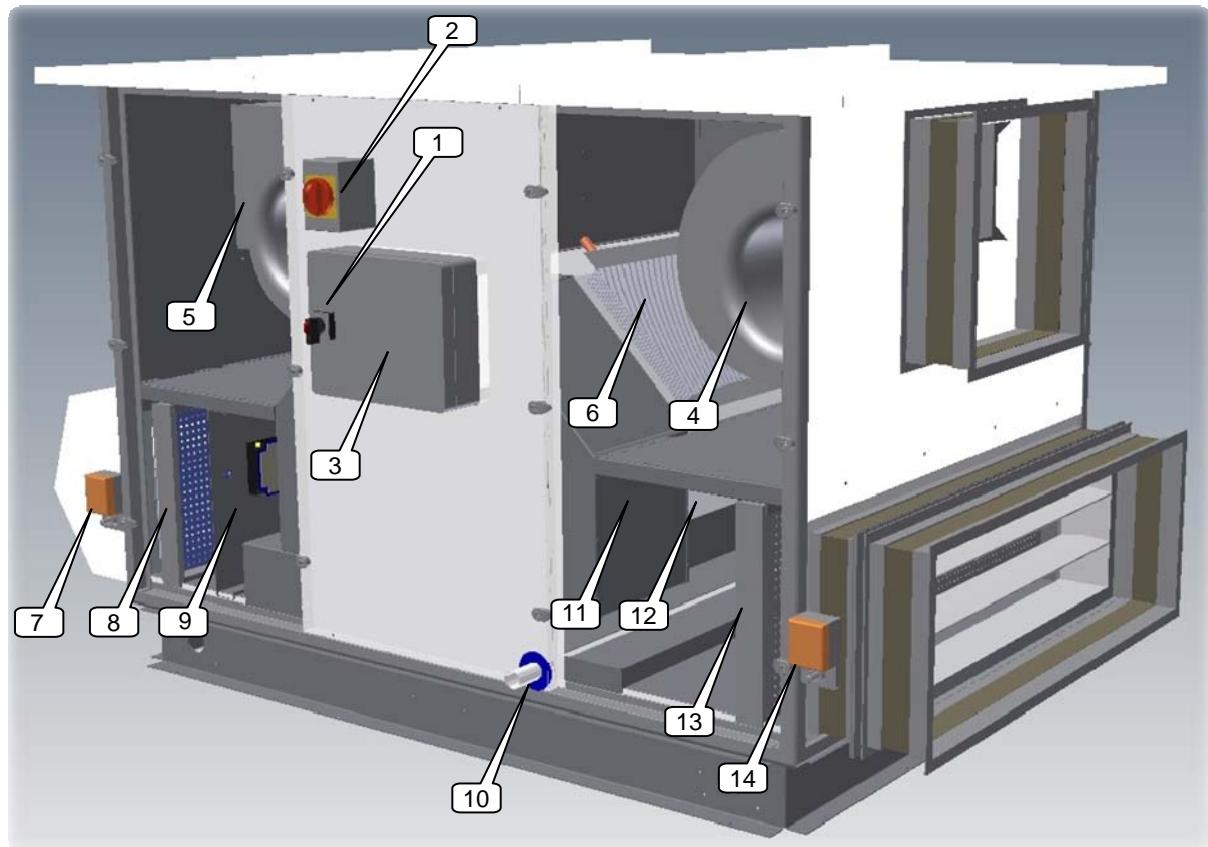


e)

4 WIRING INSTRUCTIONS

4.1 General information

4.1.1 Schematic of the maxi units

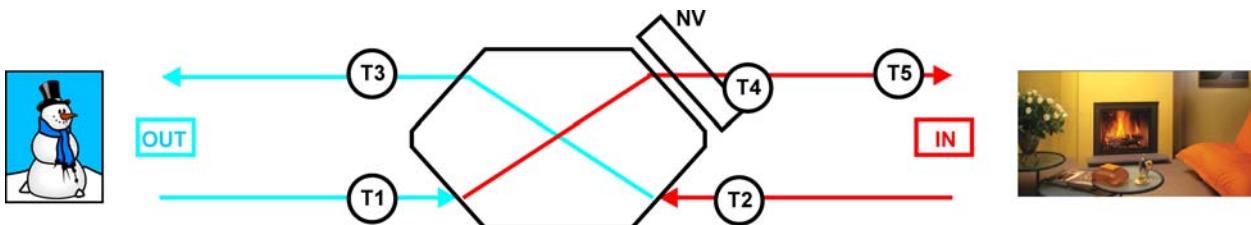


1. Main switch for power supply fans and control
2. Main switch for power supply to pre (Kwin) and/or post (Kwout) heating coils (options)
3. Centralized wiring box of the CB4 TAC4 DG circuit (factory pre-wired)
4. Supply fan(s)
5. Exhaust fan(s)
6. Post-heating water or electrical coil (NV ou KWout option)
7. Motorized damper at fresh air inlet (CT option)
8. F7 class filter at fresh air inlet
9. Pre-heating electrical antifreeze coil (KWin option)
10. Drain pan and drain
11. By-pass 100%
12. Air/Air heat exchanger
13. G4 filter on exhaust air
14. Motorized damper at exhaust air inlet (CT option)



Only electrical connections made by the installer are in 1/2/3.

4.1.2 Schematic of the T° sensors positioning in the maxi unit



To allow easier identification of the temperature sensors 4 different wire colors are used:

- T1 : black wire
- T2 : white wire
- T3 : blue wire
- T4 & T5 : green wire

4.2 Power supply to the fans and the control devices

All the internal cables (fans, controls, sensors, ...) to the main switch are factory pre-wired. All the power supply wiring that remains is the main power supply to the main switch(es).

Wiring specifications:

Unit type	Supply Voltage (1)	Maximum amps	Protection type (2)	Protection caliber
maxi 802	1 x 230V	5,5 A	D – 10.000A – AC3	8A
maxi 1202	1 x 230V	7,0 A	D – 10.000A – AC3	8A
maxi 2002	1 x 230V	14,3 A	D – 10.000A – AC3	16A
maxi 3002	1 x 230V	17,8 A	D – 10.000A – AC3	20A
maxi 4002	3 x 400V + N	18,0 A (3)	D – 10.000A – AC3	20A (4)
maxi 5002	3 x 400V + N	18,0 A (3)	D – 10.000A – AC3	20A (4)
maxi 6002	3 x 400V + N	23,1 A (3)	D – 10.000A – AC3	25A (4)

(1) Grounding is compulsory

(2) D type "slow" reaction curves - shutoff power 10.000A - AC3.

(3) Max current is reached in the neutral.

(4) 3x400V + N.

4.3 Power supply for the electrical antifreeze protection coil KWin (option)

All the internal cables of the KWin coil to the main switch are factory wired. All that needs to be wired is the main power supply to the main switch.

Wiring specifications:

Unit type	Supply voltage	KWin heating capacity	Maximum amps
maxi 802	3 x 400V + N	3 kW	4,3 A
maxi 1202	3 x 400V + N	6 kW	8,7 A
maxi 2002	3 x 400V + N	6 kW	8,7 A
maxi 3002	3 x 400V + N	9 kW	13,0 A
maxi 4002	3 x 400V + N	12 kW	17,3 A
maxi 5002	3 x 400V + N	18 kW	26,0 A
maxi 6002	3 x 400V + N	18 kW	26,0 A

4.4 Power supply and connections for the electrical post heating coil KWout (option)

All the internal cables of the KWout coil to the main switch are factory wired. All that needs to be wired is the main power supply to the main switch.

Wiring specifications:

Unit type	Supply voltage	KW in heating capacity	Maximum amps
maxi 802	3 x 400V + N	3 kW	4,3 A
maxi 1202	3 x 400V + N	4,5 kW	6,5 A
maxi 2002	3 x 400V + N	6 kW	8,7 A
maxi 3002	3 x 400V + N	9 kW	13,0 A
maxi 4002	3 x 400V + N	12 kW	17,3 A
maxi 5002	3 x 400V + N	18 kW	26,0 A
maxi 6002	3 x 400V + N	18 kW	26,0 A

4.5 Connecting the post heating water coil (option)

The post-heating water coil is delivered with a motorized 3-way valve (non-mounted).

4.5.1 Power supply



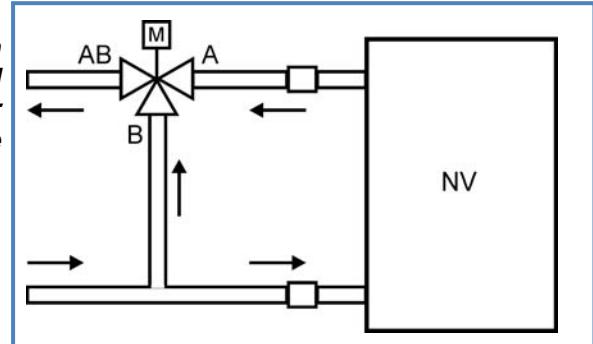
Refer to installation and setup of post heating control manual (delivered with NV option).

4.5.2 Water connection (to be made by the installer)

Connection schematic:



The internal piping (connection between PWW heating coil (NV) and 3-way valve is run by the engineer on the final positioning of the device, eg on a wall.



These are the specifications for the water coil connection:

Unit type	Diameter on the coil	Diameter on the valve	Coil Capacity (*)	Water flow (*)	Pressure loss (*)
maxi 802	1/2"	G 1B	4,5 kW	199 l/h	1,4 kPa
maxi 1202	1/2"	G 1B	8,0 kW	353 l/h	6,5 kPa
maxi 2002	1/2"	G 1B	13,2 kW	585 l/h	20,4 kPa
maxi 3002	1/2"	G 1B	19,4 kW	857 l/h	11,1 kPa
maxi 4002	1/2"	G 1B	27,8 kW	1200 l/h	26,8 kPa
maxi 5002	1/2"	G 1 1/4B	37,5 kW	1657 l/h	56,9 kPa
maxi 6002	1/2"	G 1 1/4B	41,6 kW	1835 l/h	68,5 kPa

(*) Nominal values for following selection conditions: air in T°: 18°C, water in/out T: 90/70°C. For other conditions refer to the maxi selection software or provided data sheet for the project.

5 TAC4 CONTROL SYSTEM

The TAC4 control device manages the following features:

- Fan airflow management (accurate knowledge of fan's working point)
- Management of time slots
- Automatic bypass control (freecooling)
- Heat exchanger anti-freeze protection control
- Automatic motorized inlet and exhaust damper control (option)
- Electrical pre-heater control (option)
- Water or electrical Post-heater (option)
- Control of external post-coil (option)
- RTU or TCP/IP MODBUS Communication (option)

The TAC4 control circuit is factory pre-wired.

There are 4 ways to 'communicate' with the TAC4 control:

- RC TAC4 (LCD remote control)
- GRC TAC4 (graphic touchscreen display, can control up 247 units)
- MODBUS RTU network (usually to connect to a BMS)
- MODBUS TCP/IP network for a webserver type application, also allows GPRS communication

The following options can be combined with TAC4 control:

- RC TAC4 Option : remote control to setup, control and visualize the parameters.
Please refer to TAC4 DG – RC TAC4 installation and user's manual for detailed information
- GRC TAC4 Option : graphic remote touchscreen to setup, control and visualize the parameters.
Please refer to TAC4 DG – GRC TAC4 installation and user's manual for detailed information
- SAT TAC4 BA/KW Option:
Regulation of 2 external heat exchangers (electrical / water, hot and / or cold)
please refer to SAT TAC4 BA/KW installation and user's manual for detailed information
- The SAT3 Option is a Circuit with 2 relays (2 SAT3 can be plugged)
 - When plugged in position OR1/OR2: status of "Fan On" warning and of "Pressure alarm" warning and/or
 - When plugged in position OR3/OR4 : status of NV option circulator and of «bypass»
please refer to SAT3 installation and user's manual for detailed information
- SAT TAC4 MODBUS Option : MODBUS RTU communication
please refer to SAT TAC4 MODBUS installation and user's manual for detailed information
- TCP/IP TAC4 MODULE Option:
MODBUS TCP/IP communication.
please refer to SAT TAC4 MODBUS installation and user's manual for detailed information
- GPRS TAC4 MODULE Option:
GPRS Kommunikation. Please refer to TAC4 DG - GPRS installation and user's manual for detailed information



Each one of these communication configuration is fully described in a separate installation manual.

6 MAINTENANCE



Before handling and/or opening the access panels it is compulsory to shut down the power supply using the general switch located on the front panel. If options KWin and/or KWout are installed, then shut down the corresponding general switches.

Regular maintenance of the maxi unit is essential to guarantee a good operation of the device and a long life expectancy. The maintenance frequency will depend on the application and on the actual environment conditions but in a general way the following controls are advised:

6.1 Every 3 months

1. Check for any alarm indicated on the control device. In case of alarm refer to control manual.
2. Check the state of filter clogging. The control device allows to set a pre-defined 'filter clogging' threshold (refer to installation manual). If need be replace filters. Filters that are too clogged can generate the following problems :
 - Insufficient ventilation
 - Excessive increase of fan rotation speed, creating excessive sound level
 - Excessive power consumption (power consumption will increase exponentially to an increase in pressure drop, for a constant airflow)
 - A damaged filter allows unfiltered air to enter heat exchanger (risk of clogging) and into ventilated room.

List of replacement filters :

Unit name	Filter(s) air "out"	Filter(s) air "in"
maxi 802	1 x G4 (470x287x50) – cid 528006320	1 x F7 (470x287x50) – cid 528006310
maxi 1202	1 x G4 (830x287x50) – cid 528006340	1 x F7 (830x287x50) – cid 528006330
maxi 2002	2 x G4 (503x370x50) – cid 528006730	2 x F7 (503x370x50) – cid 528006720
maxi 3002	1 x G4 (503x370x50) – cid 528006730 2 x G4 (436x370x50) – cid 528006750	1 x F7 (503x370x50) – cid 528006720 2 x F7 (436x370x50) – cid 528006740
maxi 4002	4 x G4 (436x370x50) – cid 528006750	4 x F7 (436x370x50) – cid 528006740
maxi 5002	5 x G4 (503x370x50) – cid 125063	5 x F7 (503x370x50) – cid 125062
maxi 6002	5 x G4 (503x370x50) – cid 125063	5 x F7 (503x370x50) – cid 125062

3. Inspection and cleaning of the inside of the unit:
 - Vacuum clean any accumulation of dust in the unit.
 - Inspect and gently vacuum clean if need be the heat exchanger. Use brush accessory to protect fins.
 - Clean the possible condensation marks and possible accumulations in the drain pan.

6.2 Every 12 months

1. Check for any alarm indicated on the control device. In case of alarm refer to installation manual.
2. Check the state of filter clogging. The control device allows to set a pre-defined 'filter clogging' threshold (refer to installation manual). If need be replace filters. Filters that are too clogged can generate the following problems:
 - Insufficient ventilation
 - Excessive increase of fan rotation speed, creating excessive sound level
 - Excessive power consumption (power consumption will increase exponentially to an increase in pressure drop, for a constant airflow)
 - A damaged filter allows unfiltered air to enter heat exchanger (risk of clogging) and into ventilated room.

See above for list of replacement filters

3. Inspection and cleaning of the inside of the unit:
 - Vacuum clean any accumulation of dust in the unit.
 - Inspect and gently vacuum clean if need be the heat exchanger. Use brush accessory to protect fins.

- Clean the possible condensation marks and possible accumulations in the drainpan.
- Clean drainpan
- Clean the inside of the bypass. To access interior of bypass it is necessary to force-open it, proceed as follows: jump terminals IN4 and +12V on the CB4 TAC4 DG circuit board. The bypass is now open, independently of temperature conditions.
- Remember to remove jump between terminals IN4 and +12V once cleaning of bypass is done.

4. Fan maintenance :
Check again if power supply is shut down and fans are not running.
Check cleanliness of fan. Clean if necessary, be careful not to alter balancing of the fan wheel (do not remove balancing clips). Dismount fans if necessary.

5. Check airtightness of unit:
Particularly check that side access panels are well closed and that airtightness seals are in a good state. Replace if necessary

As of June 18th 2012

Although we have created our documentation carefully, we accept no liability for errors and / or lack of information that might have crept in inadvertently.

Appendix 1: TAC4 DG: ADVANCED SETUP

Advanced Setup is used to enable certain specific features or to modify standard settings. The order of the table below corresponds to the sequence in the RC.

If TAC4 DG + RC regulation:

To start the advanced setup, press SETUP and ENTER simultaneously until 'ADVANCED SETUP' appears on the screen. Make selection via $\uparrow \downarrow$ buttons, then press ENTER to confirm. Numbers are introduced digit by digit.

If TAC4 DG + GRC regulation:

Select 'Advanced Setup' on the GRC menu. CAUTION: some parameters considered as 'advanced' in the RC figure as 'standard' configuration of the GRC. In this case, "See setup" is mentioned in the table below, and consult MI TAC4 DG + GRC installation manual for configuration. Appendix 1 shows all the Advanced Setup screens, with a reference number. The table below refers to these numbers.

If TAC4 DG + MODBUS regulation:

For each feature of the advanced setup, the registry number is shown in the table. For more details see " TAC4 DG + MODBUS Installation Manual".

Function	Description	TAC4 DG + RC		TAC4 DG + GRC	TAC4 DG + MODBUS Register n°
		Step	Text on screen		
For all working modes (CA, LS, CPs)					
Password	If password access is enabled, enter here the access code to enter advanced setup configuration.	1 / 2	ENTRER ACCES CODE 0000	Will be requested to access advanced setup screens	40547
Modbus configuration	Enter MODBUS communication configuration mode ?	3 / 4	MODBUS CONFIG ? Y	/	/
Modbus Configuration	If yes, enter Modbus address of TAC4 unit	4.1	ADDRESS : 001	Will be displayed on upper right corner of each screen	40543
Modbus Configuration	Select Baudrate : 1200-4800-9600-19200 Bauds	4.2	BAUDRATE 9600	/	/
Modbus Configuration	Select Parity: N (none) – E (even) – O (odd)	4.3	PARITY : N	/	/
RC takes back control of setup (after Modbus)	If tsetup and control features were made via Modbus communication, possibility here to switch control to an RC.	4.4	CONTROL BY RC ? Y	screen 8 (Set RC Master)	40200
If LS working mode					
Stop fans for certain 0-10V signal voltage values	Stop fans if actual 0-10V signal value < Vlow ?	5 / 6	STOP FAN IF V<Vlow? N	See setup screens MI TAC4 DG + GRC regulation	40501
Stop fans for certain 0-10V signal voltage values	Enter Vlow value to stop fans if actual 0-10V signal value < Vlow	6.1	Vlow : 00,0 V	See setup screens MI TAC4 DG + GRC regulation	40502
Stop fans for certain 0-10V signal voltage values	Stop fans if actual 0-10V signal value > Vsup ?	7 / 8	V>Vhigh? N	See setup screens MI TAC4 DG + GRC regulation	40503
Stop fans for certain 0-10V signal voltage values	Enter Vsup value to stop fans if actual 0-10V signal value > Vsup	8.1	Vhigh : 10,0 V	See setup screens MI TAC4 DG + GRC regulation	40504
Supply and Exhaust airflows independant from one another and linked to 2 different 0-10V signals	Possibility to drive separately exhaust and supply airflows. Supply airflow rate via a 0-10V signal connected to K2, and exhaust airflow rate via another 0-10V signal connected to K3. The link airflow rate/signal value must be the same.	9	0-10V on K3? N	See setup screens MI TAC4 DG + GRC regulation	40505

If CPs working mode					
Change Algorithm reaction speed	Configuration of the reaction speed of the CPs algorithm. 10 is Default value and is the highest reaction speed. Each -1 step corresponds to a doubling of the reaction time (10 = T, 9 = 2xT, 8 = 4xT,...). The default value is determined for most ducting application, only special applications (constant pressure in a room) require to change this parameter.	10	SPEED CPs? 10	Screen 1 (CPs speed)	40506
Change Algorithm reaction logic	Configuration of CPs mode operating logic: • Negative logic: - airflow rate drops when signal on K2 > assignment value - airflow rate rises when signal on K2 < assignment value • Positive Logic :: - airflow rate rises when signal on K2 > assignment value - airflow rate drops when signal on K2 < assignment value	11	LOGIC? NEGATIVE	Screen 1 (CPs Logic)	40507
If CA or LS working mode					
Stop fans when pressure alarm	Possibility to stop the fans in case of pressure alarm (after cancelling the alarm, press RESET to restart the fans..)	12 / 13	PRESSURE ALARM STOP FAN? N	Screen 2 (Stop fans if alarm Pa ?)	40500
For all working modes (CA, LS, CPs)					
Change Starting Torque	Possibility to modify the fan's starting torque (2% default).	14 / 15	START TORQUE? 02%	Screen 1 (Start torque)	40508
Disable softstop function (via control device)	Disable the possibility to stop the fans using the RC (remote control) via K1/K2/K3 circuit TAC4 DG. This feature corresponds to disabling the softstop function: - If RC master: the OFF key is disabled. - If TAC4 DG master: - CA mode: if no entries connected to K1/K2/K3 then K1 airflow is activated. - LS ou CPs Mode: if K1 entry not connected to +12V, then control will operate as if K1 was connected to +12V. To do this select N (O is default value)	16 / 17	FANS OFF Y	Screen 1 (Softstop allowed?)	40509
Boost function	Configure supply/exhaust airflow rate in case of activation of Boost feature ?	18	BOOST CONFIG? N	/	/
Boost function	Enter supply airflow rate in case of activation of Boost feature ?	18.1	SUPPLY? xxx m³/h	Screen 1 (Boost : supply)	40548
Boost function	Enter exhaust airflow rate in case of activation of Boost feature ?	18.2	EXHAUST? xxx m³/h	Screen 1 (Boost : exhaust)	40549
Fire Alarm	Configure fire alarm operating mode ?.	19	FIRE AL CONFIG? N	/	/
Fire Alarm	Select how fire alarm is activated : entry IN3 is N.O or N.C (normally open or normally closed) NO : alarm is activated when in3 contact closed NC : alarm is activated when in3 contact is open	19.1	CONTACT IN3 ? N.O	Screen 2 (IN3 contact)	40510
Fire Alarm	Enter supply airflow rate when fire alarm is activated.	19.2	SUPPLY? 0000 m³/h	Screen 2 (Supply)	40511
Fire Alarm	Enter exhaust airflow rate when fire alarm is activated.	19.3	EXHAUST? 0000 m³/h	Ecran 2 (Exhaust)	40512
Bypass control	Possibility to modify T° set points to control opening/closing the bypass. • <u>Open by-pass</u> if all following conditions are met : - Outdoor T° (S1) < indoor T° (S2). - Outdoor T° (S1) > T1. - Indoor T° (S2) > T2. • <u>Closing by-pass</u> if one of the conditions is met: - Outdoor T° (S1) > T° indoor (S2). - Outdoor T° (S1) < T1 - 1°C. - Indoor T° (S2) < T2 - 2°C.	20 / 21 / 22	BYPASS T VALUES : T1: 15° T2: 22°	Screen 3 (T1 and T2)	40513 40514
Bypass control	Enter supply and exhaust airflow rates when by-pass is open. If you select Y, then the airflows are independent from the airflows when bypass is closed (Closed bypass airflows are function of working mode, K1,K2,K3 status or Modbus commands).	23 / 24	SET m³/h IF BYPASS OPEN? N	Screen 3 (set m³/h if the bypass is open ?)	40515

Bypass control	Enter supply airflow rate when by-pass open.	24.1	SUPPLY 0000m ³ h	Screen 3 (Supply)	40516
Bypass control	Enter exhaust airflow rate when by-pass open.	24.2	EXHAUST 0000m ³ h	Screen 3 (Exhaust)	40517
Antifrosting protection	If KWin option not installed: Possibility to enable (Y) or not (N) the heat exchanger's antifrost function by supply airflow rate reduction..	25	AF? Y	Screen 6 (AF protection active ?)	40519
Antifrosting protection	Possibility to modify the antifrost function parameters.	25.1	CONFIG AF? N	/	/
Antifrosting protection	Enter low T° value for antifrost function.	25.1.1	T° LOW AF: 0°C	Screen 5 (T° Low AF)	40520
Antifrosting protection	Enter high T° value for antifrost function.	25.1.2	T° HIGH AF: 3°C	Screen 5 (T° High AF)	40521
Antifrosting protection	Possibility to stop the fans if supply air T° < T° LOW.	25.1.3	AF STOP FAN?Y	Screen 5 (Stop supply if T° < T° Low?)	40522
KWin	If KWin pre-heat coil present (option) : Enter Setpoint T° to start ant-frosting process.	26	KWin T° AF/+1,0°	Screen 4 (Setpoint KWin)	40518
KWin / KWout	If KWin or KWout option present, it is possible to modify the PID parameters. CAUTION : these modifications can be fatal and should only be carried out by qualified personnel.	27	CONFIG PID KW ? N	/	/
KWin	KWin : possibility to modify PID parameter (PB)	27.1	KWin PID PB=005	Screen 4 (Select PID KWin)	40523
KWin	KWin : possibility to modify PID parameter (Tr)	27.2	KWin PID Ti=030	Screen 4 (Select PID KWin)	40524
KWin	KWin : possibility to modify PID parameter (Td)	27.3	KWin PID Td=011	Screen 4 (Select PID KWin)	40525
KWout	KWout: possibility to modify PID parameter (PB)	27.4	KWoutPID PB=005	Screen 7 (Select PID KWout)	40527
KWout	KWout: possibility to modify PID parameter (Tr)	27.5	KWoutPID Ti=030	Screen 7 (Select PID KWout)	40528
KWout	KWout: possibility to modify PID parameter (Td)	27.6	KWoutPID Td=011	Screen 7 (Select PID KWout)	40529
NV	If NV option installed: Possibility to change the reaction speed configuration of the post heating algorithm (3 way valve regulation). Default value is '5' for a middle speed reaction time. Each step of -1 corresponds to a doubling of the reaction time ('5'=T, '4'=2xT, '3'=4xT, '2'=8xT, ...). Each step of +1 corresponds to a halving of the reaction time ('5'=T, '6'=T/2, '7'=T/4, '8'=T/8, ...). We recommend changing this value only if you experience T° stability problems in your application.	28	NV/BA SPEED 05	Screen 6 (NV speed)	40526
SAT BA	Possibility to modify the regulation parameters of the heat exchangers regulated by the SAT TAC4 BA/KW (option)	29	SAT BA ? NO	/	/
SAT BA	Select coil type(s) regulate by the SAT TAC4 BA/KW: BA+, BA-, BA+/-, BA+/BA-, KW or BA-/KW	29.1	TYPE BA ? KW/BA-	Screen 6 or 7 (Sat BA?)	40550
SAT BA	If BA+ option installed and regulated by SAT TAC4 BA/KW : Possibility to change the reaction speed configuration of the post heating algorithm (3 way valve regulation). Default value is '5' for a middle speed reaction time. Each step of -1 corresponds to a doubling of the reaction time ('5'=T, '4'=2xT, '3'=4xT, '2'=8xT, ...). Each step of +1 corresponds to a halving of the reaction time ('5'=T, '6'=T/2, '7'=T/4, '8'=T/8, ...). We recommend changing this value only if you experience T° stability problems in your application.	29.1.1	NV/BA SPEED 05	Screen 6 (BA+ speed)	40526

SAT BA	If BA- option installed and regulated by SAT TAC4 BA/KW : Possibility to change the reaction speed configuration of the post heating algorithm (3 way valve regulation). Default value is '5' for a middle speed reaction time. Each step of -1 corresponds to a doubling of the reaction time ('5'=T, '4'=2xT, '3'=4xT, '2'=8xT, ...). Each step of +1 corresponds to a halving of the reaction time ('5'=T, '6'=T/2, '7'=T/4, '8'=T/8, ...). We recommend changing this value only if you experience T° stability problems in your application.	29.1.2	BA-SPEED 05	Screen 6 (BA- speed)	40551
0-10V output signal	Choice of information delivered by 0-10V OUT1 output connection : airflow or pressure on one fan (default value is airflow on fan F1).	30	Out 1 Pa F1	Screen 1 (OUT1 (0-10V))	40530
0-10V output signal	Choice of information delivered by 0-10V OUT2 output connection : airflow or pressure on one fan (default value is pressure on fan F1).	31	Out 2 Pa F1	Screen 1 (OUT2 (0-10V))	40531
Post ventilation	Enable post-ventilation feature (allow fans to run during a certain amount of time after softstop is activated). Caution : if Preheat KWin and/or Post-heat KWout, and/or SAT BA/KW is installed, the post-ventilation feature is automatically enabled. It is then impossible to set it to 'NO'.	32	POST VENT? N	Screen 6 (Post-vent. ?)	40532
Post ventilation	Enter post-ventilation time (in seconds) Caution: if pre or post electrical heating (KWin / KWout / KWext), time must be of at least 90 seconds.	32.1	TIME PV 0090 sec	Screen 6 (Delay)	40533
Operating time	Possibility to enable a fan operating time counter feature. The purpose is to report an maintenance alarm and/or to stop the fans after a certain time of operation.	33	FAN RUN TIME? N	Enabled if one of the operating time features is enabled. (see hereunder / cfr screen 2)	40534
Operating time	Reset operating time counter to 0	33.1	TIME RESET ? N	Screen 2 (time reset ?)	40252
Operating time	Enable display of operating time	33.2	DISPLAY TIME? N	Screen 2 (Display time ?)	40535
Operating time	Enable maintenance alarm after a certain operating time ?	33.3	SERVICE ALARM? N	Screen 2 (Service alarm ?)	40536
Operating time	Enter operating time limit (in hours) to generate a maintenance alarm.	33.3.1	TIME ? 000000 h	Screen 2 (xxxxh)	40537 40538
Operating time	Enable 'fan stop' alarm after a certain operating time ?	33.4	STOP FAN? N	Screen 2 (stop fan ?)	40539
Operating time	Enter operating time limit (in hours) to generate a 'fan stop' alarm. The fans will be stopped after this limit is passed.	33.4.1	TIME ? 000000 h	Screen 2 (xxxxh)	40540 40541
Operating time	Possibility to display only the alarms on the graphic screen. If no alarm is activated then "Vent OK" is displayed.	34	DISPLAY ALARM ONLY? N	/	40542
Access Code	Possibility to activate an access code to allow access to setup and advanced setup.	35	ACCESS CODE? N	Screen 8 (Access code ?)	40546
Access Code	Enter access code to setup and advanced setup (4 decimals).	35.1	CODE 0000	Screen 8 Possibility to configure 3 different access code levels : - Access to control level only - Access to control and setup only - Full access	40547
Full Reset	Possibility to operate a general factory reset. All factory settings are then regenerated.	36	FACTORY RESET? N		40251
	End of advanced setup	37	END SETUP		

Appendix 2: Advanced Setup screens on the GRC

Screen 1

Address 1

Flows Alarms Bypass AF NV/KW/BA Admin

Start torque 2 %

Softstop allowed?

OUT1 (0-10V) m^3/h Supply(1)

OUT2 (0-10V) Pa Supply(1)

Boost: Supply 3500 m^3/h Exhaust 3500 m^3/h

CPs Speed 10 CPs Logic Negative

Screen 2

Address 1

Flows Alarms Bypass AF NV/KW/BA Admin

Stop fans if alarm Pa?

Fire alarm IN3 contact N.O.

Supply 3000 m^3/h

Exhaust 1500 m^3/h

Fan runtime Time reset?

Display time?

Service alarm? 2000 h

Stop fan? 2500 h

Screen 3

Address 1

Flows Alarms Bypass AF NV/KW/BA Admin

Bypass temperature values:

T1 : 15.0 °C

T2 : 22.0 °C

Set m^3/h if the bypass is open?

Supply 2800 m^3/h

Exhaust 2800 m^3/h

Screen 4

Address 1

Flows Alarms Bypass AF NV/KW/BA Admin

Setpoint KWin -2.0 °C

PID KWin

Screen 5

Address 1

Flows Alarms Bypass AF NV/KW/BA Admin

AF protection active?

T°Low AF 0.0 °C

T°High AF 3.0 °C

Stop supply if $T^<T^{\circ}\text{Low}$?

Screen 6

Address 1

Flows Alarms Bypass AF NV/KW/BA Admin

Post-vent.?

Delay 90 s

NV Speed 5

Sat BA? BA+/BA-

BA+ Speed 5

BA- Speed 5

Screen 7

Address 1

Flows Alarms Bypass AF NV/KW/BA Admin

Post-vent.?

Delay 90 s

PID KWout

Sat BA? KW/BA-

BA- Speed 5

Screen 8

Address 1

Flows Alarms Bypass AF NV/KW/BA Admin

Access code?

- Low (Access Control only)
- Medium (Control and Setup access)
- High (Full access)

Factory reset?

Set RC Master?

Product Setup Calibrate

Appendix 3: Installation control datasheet (to be filled in after starting the installation)

To facilitate future interventions in the scheme, please enter all made specific settings. Please have this document before contacting us. Without this document can help may not be possible.

Installed by:

Name: _____
 Company: _____
 Address: _____
 Telephone: _____

installation date: ___/___/___

CONFIGURATION PARAMETERS:

1	maxi model	
2	Working mode	CA LS CPs others
3	if CA mode:	m^3/h K1 = m^3/h K2 = m^3/h K3 =
4	if LS mode:	Vmin = Vmax = $m^3/h \equiv Vmin =$ $m^3/h \equiv Vmax =$ % on K3 =
5	if CPs mode:	Assignment Pa = V (oder Pa) % on K3 =
6	% EXT/PUL	%
7	Pressure alarm (modes CA / LS only)	Activated ? ja / nein If yes: Automatic / manual setup Initialisation: Supply air : m^3/h Pa Exhaust air : m^3/h Pa
8	if KWin option :	T° KWin = $^\circ C$
9	if KWout option	T° KWout = $^\circ C$
10	if NV option :	T° NV = $^\circ C$

Indicate here all changes made in the advanced setup, if any:

VALUES READ OFF DISPLAY WHEN MAXI in OPERATION:

1	Supply airflow 1	m^3/h
2	Supply pressure 1	Pa
3	Supply airflow 2 (maxi 4002 / maxi 5002 / maxi 6002 only)	m^3/h
4	Supply pressure 2 (maxi 4002 / maxi 5002 / maxi 6002 only)	Pa
5	Exhaust airflow 1	m^3/h
6	Exhaust pressure 1	Pa
7	Exhaust airflow 2 (maxi 4002 / maxi 5002 / maxi 6002 only)	m^3/h
8	Pressure airflow 2 (maxi 4002 / maxi 5002 / maxi 6002 only)	Pa

Date: 18/06/2012

Subject to change in the interest
of technical progress.

Technical Data

Mechanical Ventilation Heat Recovery Unit maxi 802

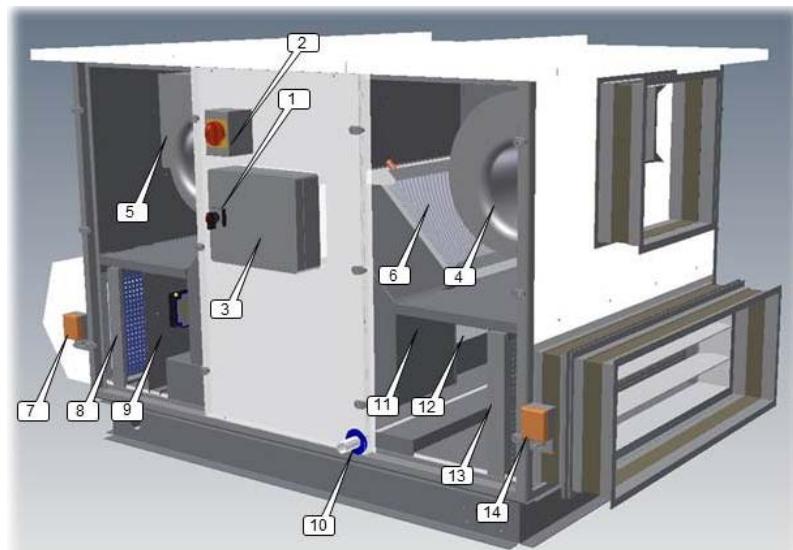


Ansicht:



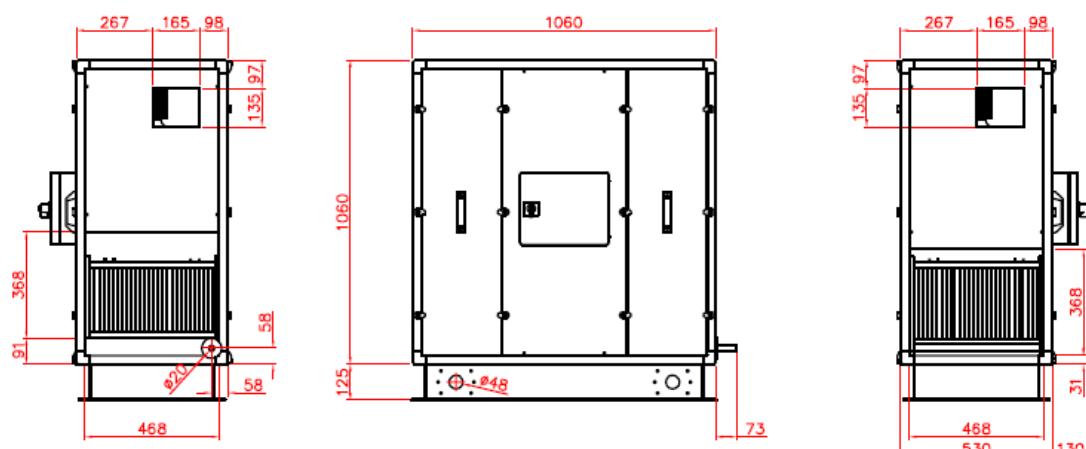
Fig.: maxi 2002

Geräteaufbau:



- 1 Main switch for power supply fans and control
- 2 Main switch for power supply to pre (Kwin) and/or post (Kwout) heating coils (options)
- 3 Centralized wiring box of the CB4 TAC4 DG circuit (factory pre-wired)
- 4 Supply fan(s)
- 5 Exhaust fan(s)
- 6 Post-heating water or electrical coil (NV ou KWout option)
- 7 Motorized damper at fresh air inlet (CT option)
- 8 F7 class filter at fresh air inlet
- 9 Pre-heating electrical antifreeze coil (KWin option)
- 10 Drain pan and drain
- 11 By-pass 100%
- 12 Air/air – heat exchanger
- 13 G4 filter on exhaust air
- 14 Motorized damper at exhaust air inlet (CT option)

Unit dimensions without pipe connections:



Maximum dimensions (LxWxH in mm): 1060x660x1185

MVHR components:	
Heat exchanger:	Aluminum cross counterflow heat exchanger on slide rails
Fans:	EC direct current radial fans
Filters:	Filter class: intake air F7, extract air G4
Housing:	Housing frame: anodized aluminum hollow sections with reinforced PP corner joints 30 mm double wall panel construction: galvanized sheet metal inside, polyester coated steel outside, sound and heat insulation by 28 mm thick EPS boards (self-extinguishing, class M1). Outdoor installation of MVHR unit is possible; optionally, a hood can be obtained. All doors to fans and filters are equipped with handles. The MVHR unit is mounted on a base frame and has to be installed vertically on this frame.
Summer operation:	motorized summer bypass, temperature-controlled, heat exchanger is 100% shut off
Air connections: (components possible)	Intake air: suction hood with fixed-bar grille (with/without flap) or flap or canvas connection (with/without flap) or spigot joint Exhaust air: canvas connection or spigot joint or multileaf damper (self-closing) Supply air: canvas connection or spigot joint Extract air: canvas connection (with/without flap) or flap or spigot joint
Condensate drain:	Stainless steel drip pan with condensate drain connection Ø 20 mm and siphon
Electrical connection:	Fans and controlling devices: 1 x 230 V, 50/60 Hz; on main switch (pre-wired with centralized wiring box) Electric pre and backup duct heaters , optionally: 3 x 400 V +N, 50/60 Hz; separate main switch (pre-wired with main switch)
IP Code (acc. to DIN 40050):	IP 44 (fans) IP 20 (RC TAC4 REC)
Weight:	167 kg (Base unit without additional components)
Operating range:	-10 bis 55 °C (environmental conditions at the fan motor)

Operating Data:

Volume flow rate	Heat recovery ratio ¹⁾	Supply air temperature ¹⁾	max. pressure available		Power consumption ²⁾	Sound pressure level ²⁾ in distance of 3 m
			Supply air	Extract air		
m ³ /h	%	°C	Pa	Pa	W	dB(A)
400	92,6	19,6	521	513	154	43,3
600	91,2	19,2	370	352	303	47,4
700	90,7	19,0	288	263	406	49,2
800	90,2	18,9	206	173	529	50,9

¹⁾ Values for supply and extract air volume flow at $t_{Au} = -10$ °C, $\varphi_{Au} = 90$ % r.F. and $t_{Ab} = 22$ °C, $\varphi_{Ab} = 50$ % r.F.

²⁾ at external pressure of 100 Pa

TAC4 control system:

- Fan airflow management (accurate knowledge of fan's working point)
- Management of time slots
- Automatic bypass control (freecooling)
- Heat exchanger anti-freeze protection control
- Automatic motorized inlet and exhaust damper control (option)
- Electrical pre-heater control (option)
- Water or electrical Post-heater (option)
- Control of external post-coil (option)
- RTU or TCP/IP MODBUS Communication (option)

The TAC4 control circuit is factory pre-wired.

Control options / communications:

<ul style="list-style-type: none"> • RC TAC4, Fernbedienung mit LCD-Display  <p>Size: 122 x 66 mm Cable to the control unit: IYSTY 2x2x0,6; max. 1000 m; by customer</p>	<ul style="list-style-type: none"> • TCP/IP TAC4 module - Gateway for communication with building management systems (BMS) via MODBUS TCP/IP network 
<ul style="list-style-type: none"> • GRC TAC4 (graphic touchscreen display) - can control up 247 units  <p>Size: 152 x 87 mm Cable to the control unit: IYSTY 2x2x0,6 with RS-232-connector; 3 m</p>	<ul style="list-style-type: none"> • GPRS TAC4 modul - for a webserver type application, also allows GPRS communication 

Please note: For maintenance, a free space on the operating side of at least 60 cm is required! A distance of 50 cm is recommended for all three other sites!

Date: 18/06/2012

Subject to change in the interest
of technical progress.

Technical Data

Mechanical Ventilation Heat Recovery Unit maxi 1202

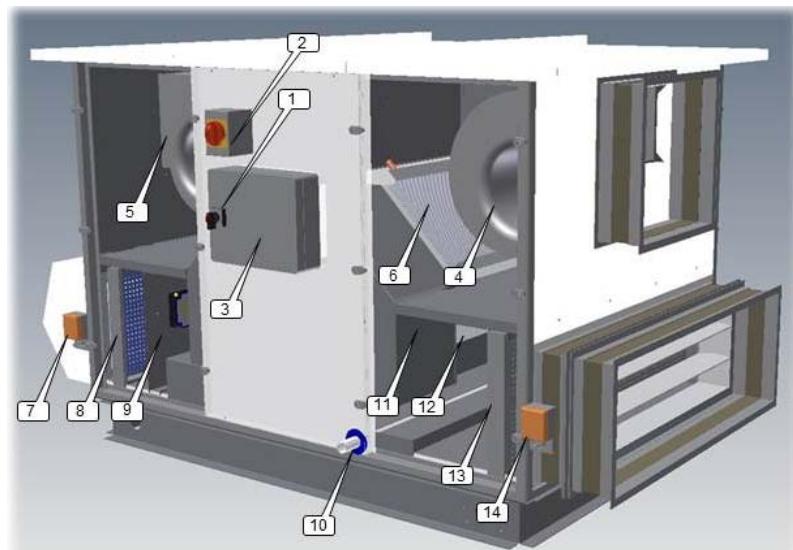


View:



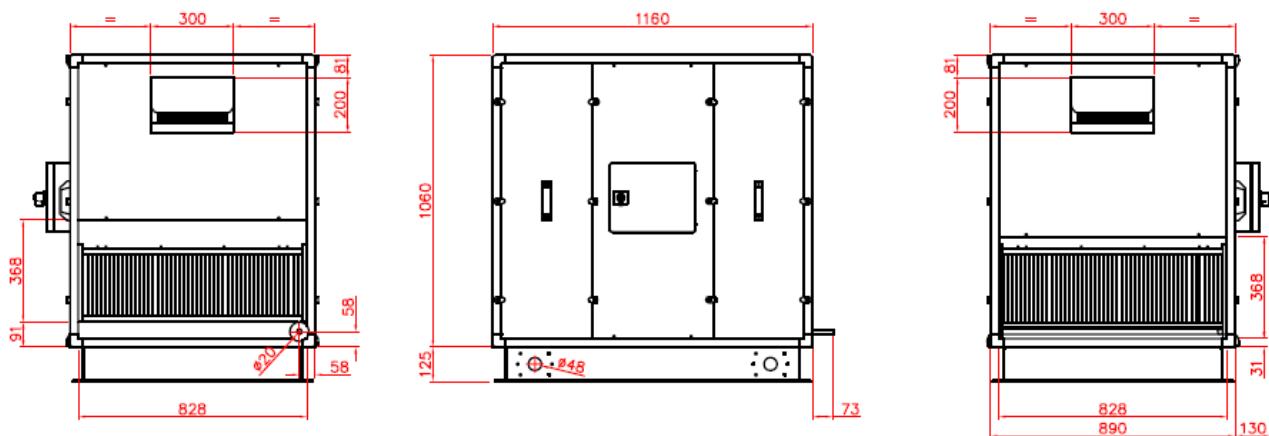
Fig.: maxi 2002

Design:



- 1 Main switch for power supply fans and control
- 2 Main switch for power supply to pre (Kwin) and/or post (Kwout) heating coils (options)
- 3 Centralized wiring box of the CB4 TAC4 DG circuit (factory pre-wired)
- 4 Supply fan(s)
- 5 Exhaust fan(s)
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- 8 F7 class filter at fresh air inlet
- 9 Pre-heating electrical antifreeze coil (KWin option)
- 10 Drain pan and drain
- 11 By-pass 100%
- 12 Air/air – heat exchanger
- 13 G4 filter on exhaust air
- 14 Motorized damper at exhaust air inlet (CT option)

Unit dimensions without pipe connections:



Maximum dimensions (LxWxH in mm): 1160x1020x1185

MVHR components:	
Heat exchanger:	Aluminum cross counterflow heat exchanger on slide rails
Fans:	EC direct current radial fans
Filters:	Filter class: intake air F7, extract air G4
Housing:	Housing frame: anodized aluminum hollow sections with reinforced PP corner joints 30 mm double wall panel construction: galvanized sheet metal inside, polyester coated steel outside, sound and heat insulation by 28 mm thick EPS boards (self-extinguishing, class M1). Outdoor installation of MVHR unit is possible; optionally, a hood can be obtained. All doors to fans and filters are equipped with handles. The MVHR unit is mounted on a base frame and has to be installed vertically on this frame.
Summer operation:	motorized summer bypass, temperature-controlled, heat exchanger is 100% shut off
Air connections: (components possible)	Intake air: suction hood with fixed-bar grille (with/without flap) or flap or canvas connection (with/without flap) Exhaust air: canvas connection or spigot joint or multileaf damper (self-closing) Supply air: canvas connection or spigot joint Extract air: canvas connection (with/without flap) or flap
Condensate drain:	Stainless steel drip pan with condensate drain connection Ø 20 mm and siphon
Electrical connection:	Fans and controlling devices: 1 x 230 V, 50/60 Hz; on main switch (pre-wired with centralized wiring box) Electric pre and backup duct heaters , optionally: 3 x 400 V +N, 50/60 Hz; separate main switch (pre-wired with main switch)
IP Code (acc. to DIN 40050):	IP 44 (fans) IP 20 (RC TAC4 REC)
Weight:	217 kg (Base unit without additional components)
Operating range:	-10 bis 55 °C (environmental conditions at the fan motor)

Operating Data:

Volume flow rate	Heat recovery ratio ¹⁾	Supply air temperature ¹⁾	max. pressure available		Power consumption ²⁾	Sound pressure level ²⁾ in distance of 3 m
			Supply air	Extract air		
m³/h	%	°C	Pa	Pa	W	dB(A)
600	93,1	19,8	494	488	198	44,8
800	92,1	19,5	407	396	301	46,7
1000	91,4	19,2	324	307	433	49,2
1200	90,7	19,0	241	217	585	51,3

¹⁾ Values for supply and extract air volume flow at $t_{Au} = -10$ °C, $\varphi_{Au} = 90$ % r.F. and $t_{Ab} = 22$ °C, $\varphi_{Ab} = 50$ % r.F.

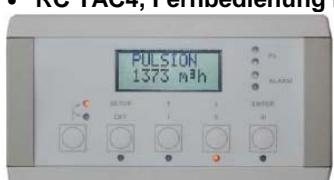
²⁾ at external pressure of 100 Pa

TAC4 control system:

- Fan airflow management (accurate knowledge of fan's working point)
- Management of time slots
- Automatic bypass control (freecooling)
- Heat exchanger anti-freeze protection control
- Automatic motorized inlet and exhaust damper control (option)
- Electrical pre-heater control (option)
- Water or electrical Post-heater (option)
- Control of external post-coil (option)
- RTU or TCP/IP MODBUS Communication (option)

The TAC4 control circuit is factory pre-wired.

Control options / communications:

<ul style="list-style-type: none"> • RC TAC4, Fernbedienung mit LCD-Display  <p>Size: 122 x 66 mm Cable to the control unit: IYSTY 2x2x0,6; max. 1000 m; by costumer</p>	<ul style="list-style-type: none"> • TCP/IP TAC4 module - Gateway for communication with building management systems (BMS) via MODBUS TCP/IP network • MODBUS RTU network - usually to connect to a BMS (without TCP/IP TAC4 module) 
<ul style="list-style-type: none"> • GRC TAC4 (graphic touchscreen display) - can control up 247 units  <p>Size: 152 x 87 mm Cable to the control unit: IYSTY 2x2x0,6 with RS-232-connector; 3 m</p>	<ul style="list-style-type: none"> • GPRS TAC4 modul - for a webserver type application, also allows GPRS communication 

Please note: For maintenance, a free space on the operating side of at least 95 cm is required! A distance of 50 cm is recommended for all three other sites!

Date: 18/06/2012

Subject to change in the interest
of technical progress.

Technical Data

Mechanical Ventilation Heat Recovery Unit maxi 2002

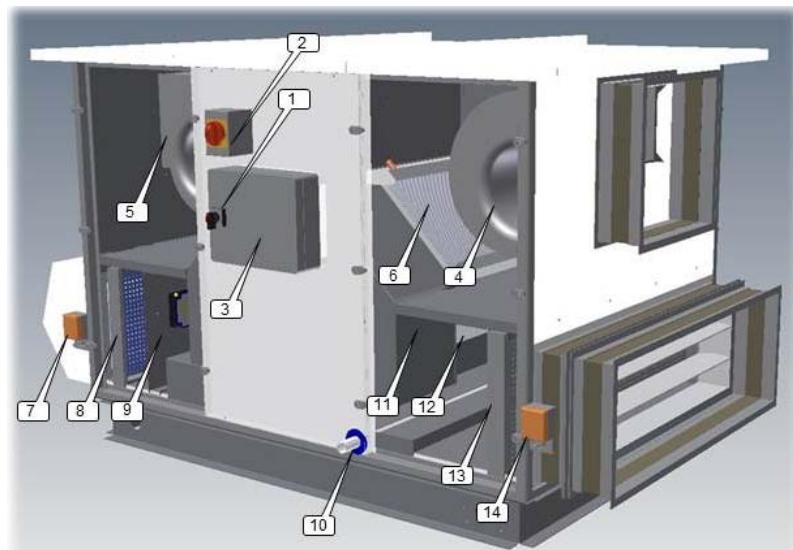


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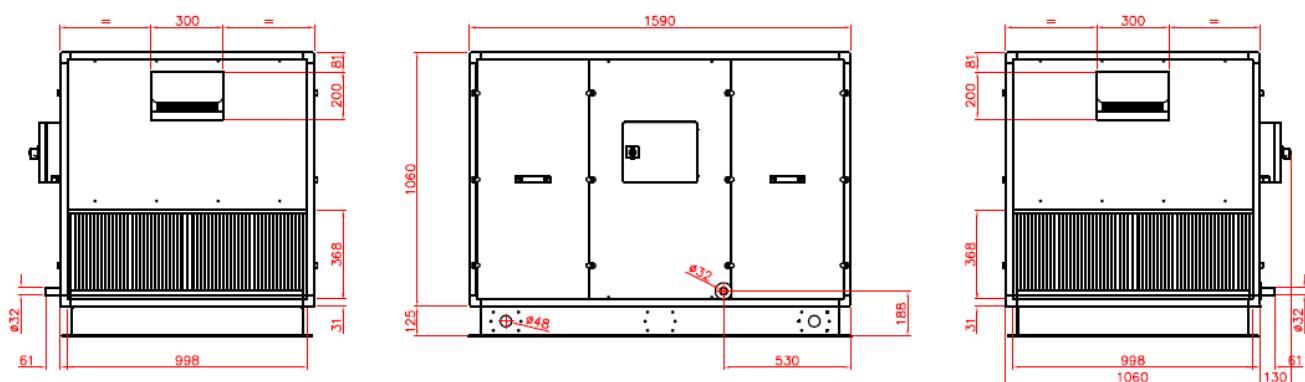
Fig.: maxi 2002

Design:



- 1 Main switch for power supply fans and control
- 2 Main switch for power supply to pre (Kwin) and/or post (Kwout) heating coils (options)
- 3 Centralized wiring box of the CB4 TAC4 DG circuit (factory pre-wired)
- 4 Supply fan(s)
- 5 Exhaust fan(s)
- 6 Post-heating water or electrical coil (NV ou KWout option)
- 7 Motorized damper at fresh air inlet (CT option)
- 8 F7 class filter at fresh air inlet
- 9 Pre-heating electrical antifreeze coil (KWin option)
- 10 Drain pan and drain
- 11 By-pass 100%
- 12 Air/air – heat exchanger
- 13 G4 filter on exhaust air
- 14 Motorized damper at exhaust air inlet (CT option)

Unit dimensions without pipe connections:



Maximum dimensions (LxWxH in mm): 1590x1190x1185

MVHR components:						
Heat exchanger:	Aluminum cross counterflow heat exchanger on slide rails					
Fans:	EC direct current radial fans					
Filters:	Filter class: intake air F7, extract air G4					
Housing:	Housing frame: anodized aluminum hollow sections with reinforced PP corner joints 30 mm double wall panel construction: galvanized sheet metal inside, polyester coated steel outside, sound and heat insulation by 28 mm thick EPS boards (self-extinguishing, class M1). Outdoor installation of MVHR unit is possible; optionally, a hood can be obtained. All doors to fans and filters are equipped with handles. The MVHR unit is mounted on a base frame and has to be installed vertically on this frame.					
Summer operation:	motorized summer bypass, temperature-controlled, heat exchanger is 100% shut off					
Air connections: (components possible)	Intake air: suction hood with fixed-bar grille (with/without flap) or flap or canvas connection (with/without flap) Exhaust air: canvas connection or spigot joint or multileaf damper (self-closing) Supply air: canvas connection or spigot joint Extract air: canvas connection (with/without flap) or flap					
Condensate drain:	Stainless steel drip pan with condensate drain connection Ø 20 mm and siphon					
Electrical connection:	Fans and controlling devices: 1 x 230 V, 50/60 Hz; on main switch (pre-wired with centralized wiring box) Electric pre and backup duct heaters , optionally: 3 x 400 V +N, 50/60 Hz; separate main switch (pre-wired with main switch)					
IP Code (acc. to DIN 40050):	IP 44 (fans) IP 20 (RC TAC4 REC)					
Weight:	296 kg (Base unit without additional components)					
Operating range:	-10 bis 55 °C (environmental conditions at the fan motor)					

Operating Data:

Volume flow rate	Heat recovery ratio ¹⁾	Supply air temperature ¹⁾	max. pressure available		Power consumption ²⁾	Sound pressure level ²⁾ in distance of 3 m
			Supply air	Extract air		
m³/h	%	°C	Pa	Pa	W	dB(A)
1000	92,8	19,8	770	761	303	46,8
1500	91,7	19,3	624	606	537	50,4
1800	90,8	19,1	482	453	849	53,4
2000	90,5	19,0	344	370	1035	54,7

¹⁾ Values for supply and extract air volume flow at $t_{Au} = -10$ °C, $\varphi_{Au} = 90$ % r.F. and $t_{Ab} = 22$ °C, $\varphi_{Ab} = 50$ % r.F.

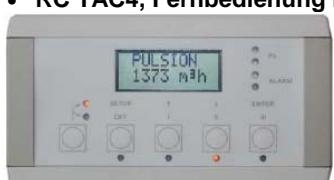
²⁾ at external pressure of 100 Pa

TAC4 control system:

- Fan airflow management (accurate knowledge of fan's working point)
- Management of time slots
- Automatic bypass control (freecooling)
- Heat exchanger anti-freeze protection control
- Automatic motorized inlet and exhaust damper control (option)
- Electrical pre-heater control (option)
- Water or electrical Post-heater (option)
- Control of external post-coil (option)
- RTU or TCP/IP MODBUS Communication (option)

The TAC4 control circuit is factory pre-wired.

Control options / communications:

<ul style="list-style-type: none"> • RC TAC4, Fernbedienung mit LCD-Display  <p>Size: 122 x 66 mm Cable to the control unit: IYSTY 2x2x0,6; max. 1000 m; by costumer</p>	<ul style="list-style-type: none"> • TCP/IP TAC4 module - Gateway for communication with building management systems (BMS) via MODBUS TCP/IP network • MODBUS RTU network - usually to connect to a BMS (without TCP/IP TAC4 module) 
<ul style="list-style-type: none"> • GRC TAC4 (graphic touchscreen display) - can control up 247 units  <p>Size: 152 x 87 mm Cable to the control unit: IYSTY 2x2x0,6 with RS-232-connector; 3 m</p>	<ul style="list-style-type: none"> • GPRS TAC4 modul - for a webserver type application, also allows GPRS communication 

Please note: For maintenance, a free space on the operating side of at least 60 cm is required! A distance of 50 cm is recommended for all three other sites!

Date: 18/06/2012

Subject to change in the interest
of technical progress.

Technical Data

Mechanical Ventilation Heat Recovery Unit maxi 3002

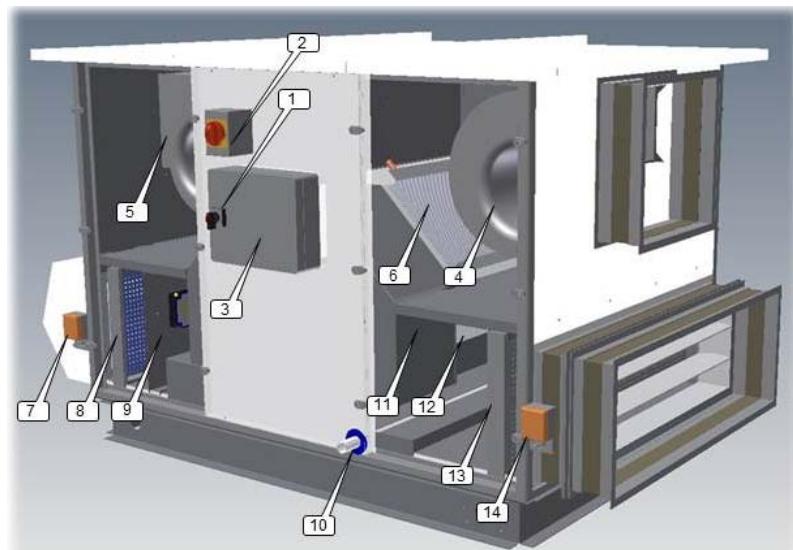


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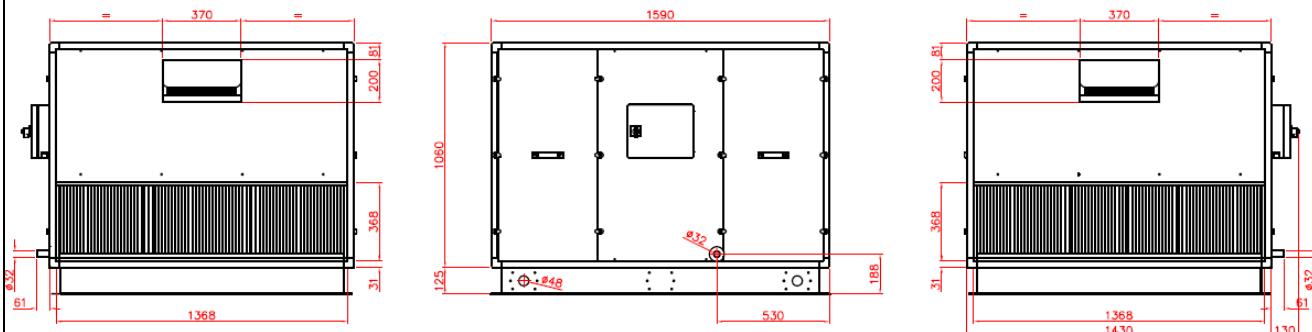
Fig.: maxi 2002

Design:



- 1 Main switch for power supply fans and control
- 2 Main switch for power supply to pre (Kwin) and/or post (Kwout) heating coils (options)
- 3 Centralized wiring box of the CB4 TAC4 DG circuit (factory pre-wired)
- 4 Supply fan(s)
- 5 Exhaust fan(s)
- 6 Post-heating water or electrical coil (NV ou KWout option)
- 7 Motorized damper at fresh air inlet (CT option)
- 8 F7 class filter at fresh air inlet
- 9 Pre-heating electrical antifreeze coil (KWin option)
- 10 Drain pan and drain
- 11 By-pass 100%
- 12 Air/air – heat exchanger
- 13 G4 filter on exhaust air
- 14 Motorized damper at exhaust air inlet (CT option)

Unit dimensions without pipe connections:



Maximum dimensions (LxWxH in mm): 1590x1560x1185

MVHR components:						
Heat exchanger:	Aluminum cross counterflow heat exchanger on slide rails					
Fans:	EC direct current radial fans					
Filters:	Filter class: intake air F7, extract air G4					
Housing:	Housing frame: anodized aluminum hollow sections with reinforced PP corner joints 30 mm double wall panel construction: galvanized sheet metal inside, polyester coated steel outside, sound and heat insulation by 28 mm thick EPS boards (self-extinguishing, class M1). Outdoor installation of MVHR unit is possible; optionally, a hood can be obtained. All doors to fans and filters are equipped with handles. The MVHR unit is mounted on a base frame and has to be installed vertically on this frame.					
Summer operation:	motorized summer bypass, temperature-controlled, heat exchanger is 100% shut off					
Air connections: (components possible)	Intake air: suction hood with fixed-bar grille (with/without flap) or flap or canvas connection (with/without flap) Exhaust air: canvas connection or spigot joint or multileaf damper (self-closing) Supply air: canvas connection or spigot joint Extract air: canvas connection (with/without flap) or flap					
Condensate drain:	Stainless steel drip pan with condensate drain connection Ø 20 mm and siphon					
Electrical connection:	Fans and controlling devices: 1 x 230 V, 50/60 Hz; on main switch (pre-wired with centralized wiring box) Electric pre and backup duct heaters , optionally: 3 x 400 V +N, 50/60 Hz; separate main switch (pre-wired with main switch)					
IP Code (acc. to DIN 40050):	IP 44 (fans) IP 20 (RC TAC4 REC)					
Weight:	378 kg (Base unit without additional components)					
Operating range:	-10 bis 55 °C (environmental conditions at the fan motor)					

Operating Data:

Volume flow rate	Heat recovery ratio ¹⁾	Supply air temperature ¹⁾	max. pressure available		Power consumption ²⁾	Sound pressure level ²⁾ in distance of 3 m
			Supply air	Extract air		
m³/h	%	°C	Pa	Pa	W	dB(A)
1500	92,8	19,7	655	647	479	48,7
2000	91,9	19,4	511	497	770	51,8
2500	91,1	19,2	396	373	1136	54,4
3000	90,5	19,0	285	251	1594	56,6

¹⁾ Values for supply and extract air volume flow at $t_{Au} = -10$ °C, $\varphi_{Au} = 90$ % r.F. and $t_{Ab} = 22$ °C, $\varphi_{Ab} = 50$ % r.F.

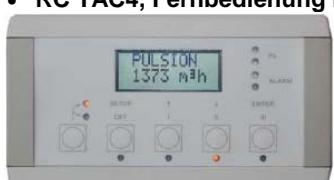
²⁾ at external pressure of 100 Pa

TAC4 control system:

- Fan airflow management (accurate knowledge of fan's working point)
- Management of time slots
- Automatic bypass control (freecooling)
- Heat exchanger anti-freeze protection control
- Automatic motorized inlet and exhaust damper control (option)
- Electrical pre-heater control (option)
- Water or electrical Post-heater (option)
- Control of external post-coil (option)
- RTU or TCP/IP MODBUS Communication (option)

The TAC4 control circuit is factory pre-wired.

Control options / communications:

<ul style="list-style-type: none"> • RC TAC4, Fernbedienung mit LCD-Display  <p>Size: 122 x 66 mm Cable to the control unit: IYSTY 2x2x0,6; max. 1000 m; by costumer</p>	<ul style="list-style-type: none"> • TCP/IP TAC4 module - Gateway for communication with building management systems (BMS) via MODBUS TCP/IP network • MODBUS RTU network - usually to connect to a BMS (without TCP/IP TAC4 module) 
<ul style="list-style-type: none"> • GRC TAC4 (graphic touchscreen display) - can control up 247 units  <p>Size: 152 x 87 mm Cable to the control unit: IYSTY 2x2x0,6 with RS-232-connector; 3 m</p>	<ul style="list-style-type: none"> • GPRS TAC4 modul - for a webserver type application, also allows GPRS communication 

Please note: For maintenance, a free space on the operating side of at least 60 cm is required! A distance of 50 cm is recommended for all three other sites!

Date: 18/06/2012

Subject to change in the interest
of technical progress.

Technical Data

Mechanical Ventilation Heat Recovery Unit maxi 4002

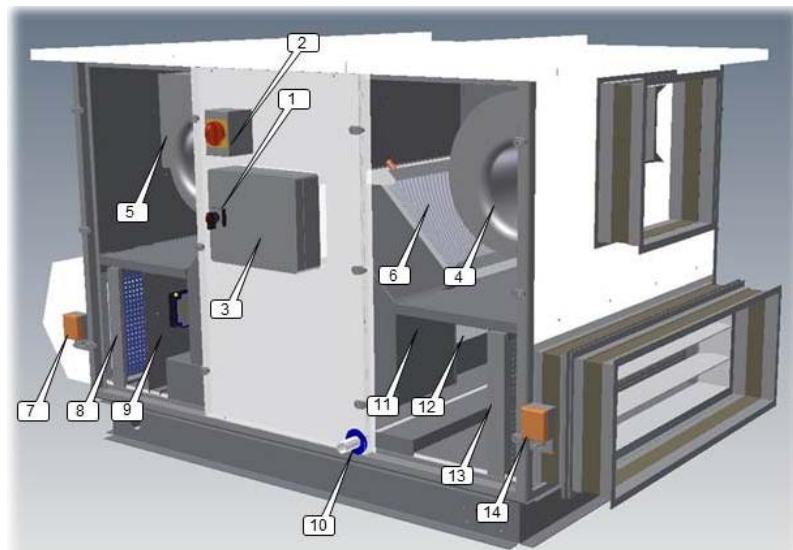


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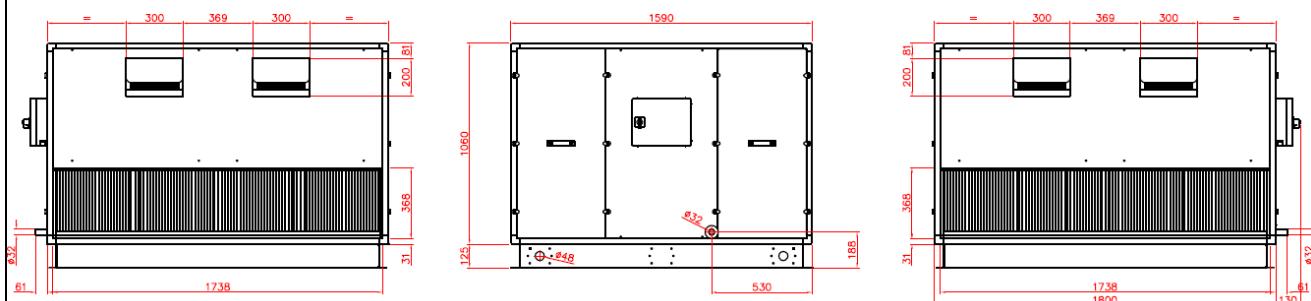
Fig.: maxi 2002

Design:



- 1 Main switch for power supply fans and control
- 2 Main switch for power supply to pre (Kwin) and/or post (Kwout) heating coils (options)
- 3 Centralized wiring box of the CB4 TAC4 DG circuit (factory pre-wired)
- 4 Supply fan(s)
- 5 Exhaust fan(s)
- 6 Post-heating water or electrical coil (NV ou KWout option)
- 7 Motorized damper at fresh air inlet (CT option)
- 8 F7 class filter at fresh air inlet
- 9 Pre-heating electrical antifreeze coil (KWin option)
- 10 Drain pan and drain
- 11 By-pass 100%
- 12 Air/air – heat exchanger
- 13 G4 filter on exhaust air
- 14 Motorized damper at exhaust air inlet (CT option)

Unit dimensions without pipe connections:



Maximum dimensions (LxWxH in mm): 1590x1930x1185

MVHR components:						
Heat exchanger:	Aluminum cross counterflow heat exchanger on slide rails					
Fans:	EC direct current radial fans					
Filters:	Filter class: intake air F7, extract air G4					
Housing:	Housing frame: anodized aluminum hollow sections with reinforced PP corner joints 30 mm double wall panel construction: galvanized sheet metal inside, polyester coated steel outside, sound and heat insulation by 28 mm thick EPS boards (self-extinguishing, class M1). Outdoor installation of MVHR unit is possible; optionally, a hood can be obtained. All doors to fans and filters are equipped with handles. The MVHR unit is mounted on a base frame and has to be installed vertically on this frame.					
Summer operation:	motorized summer bypass, temperature-controlled, heat exchanger is 100% shut off					
Air connections: (components possible)	Intake air: suction hood with fixed-bar grille (with/without flap) or flap or canvas connection (with/without flap) Exhaust air: canvas connection or spigot joint or multileaf damper (self-closing) Supply air: canvas connection or spigot joint Extract air: canvas connection (with/without flap) or flap					
Condensate drain:	Stainless steel drip pan with condensate drain connection Ø 20 mm and siphon					
Electrical connection:	Fans and controlling devices: 1 x 230 V, 50/60 Hz; on main switch (pre-wired with centralized wiring box) Electric pre and backup duct heaters , optionally: 3 x 400 V +N, 50/60 Hz; separate main switch (pre-wired with main switch)					
IP Code (acc. to DIN 40050):	IP 44 (fans) IP 20 (RC TAC4 REC)					
Weight:	486 kg (Base unit without additional components)					
Operating range:	-10 bis 55 °C (environmental conditions at the fan motor)					

Operating Data:

Volume flow rate	Heat recovery ratio ¹⁾	Supply air temperature ¹⁾	max. pressure available		Power consumption ²⁾	Sound pressure level ²⁾ in distance of 3 m
			Supply air	Extract air		
m³/h	%	°C	Pa	Pa	W	dB(A)
2000	92,8	19,7	770	762	605	49,9
3000	91,5	19,3	596	577	1212	54,3
3500	90,9	19,1	504	479	1600	56,2
4000	90,5	19,0	356	378	2048	57,8

¹⁾ Values for supply and extract air volume flow at $t_{Au} = -10$ °C, $\varphi_{Au} = 90$ % r.F. and $t_{Ab} = 22$ °C, $\varphi_{Ab} = 50$ % r.F.

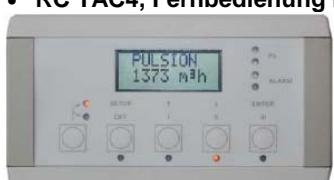
²⁾ at external pressure of 100 Pa

TAC4 control system:

- Fan airflow management (accurate knowledge of fan's working point)
- Management of time slots
- Automatic bypass control (freecooling)
- Heat exchanger anti-freeze protection control
- Automatic motorized inlet and exhaust damper control (option)
- Electrical pre-heater control (option)
- Water or electrical Post-heater (option)
- Control of external post-coil (option)
- RTU or TCP/IP MODBUS Communication (option)

The TAC4 control circuit is factory pre-wired.

Control options / communications:

<ul style="list-style-type: none"> • RC TAC4, Fernbedienung mit LCD-Display  <p>Size: 122 x 66 mm Cable to the control unit: IYSTY 2x2x0,6; max. 1000 m; by costumer</p>	<ul style="list-style-type: none"> • TCP/IP TAC4 module - Gateway for communication with building management systems (BMS) via MODBUS TCP/IP network • MODBUS RTU network - usually to connect to a BMS (without TCP/IP TAC4 module) 
<ul style="list-style-type: none"> • GRC TAC4 (graphic touchscreen display) - can control up 247 units  <p>Size: 152 x 87 mm Cable to the control unit: IYSTY 2x2x0,6 with RS-232-connector; 3 m</p>	<ul style="list-style-type: none"> • GPRS TAC4 modul - for a webserver type application, also allows GPRS communication 

Please note: For maintenance, a free space on the operating side of at least 60 cm is required! A distance of 50 cm is recommended for all three other sites!

Date: 18/06/2012

Subject to change in the interest
of technical progress.

Technical Data

Mechanical Ventilation Heat Recovery Unit maxi 5002

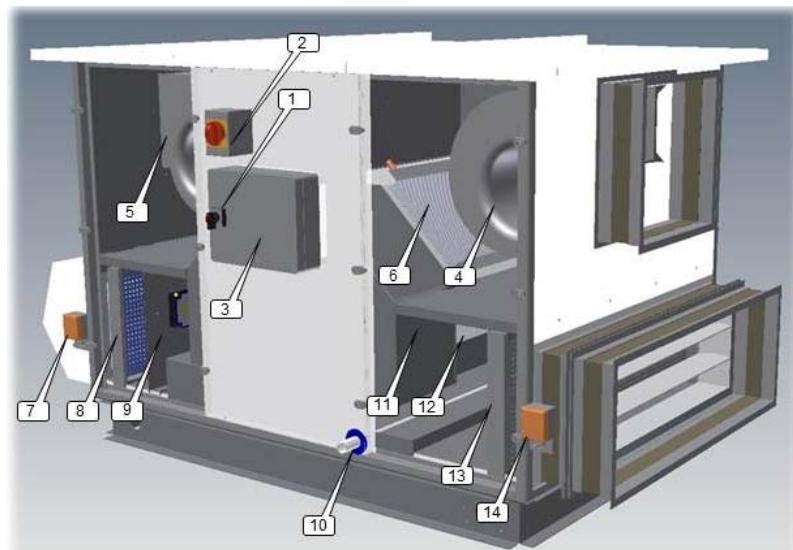


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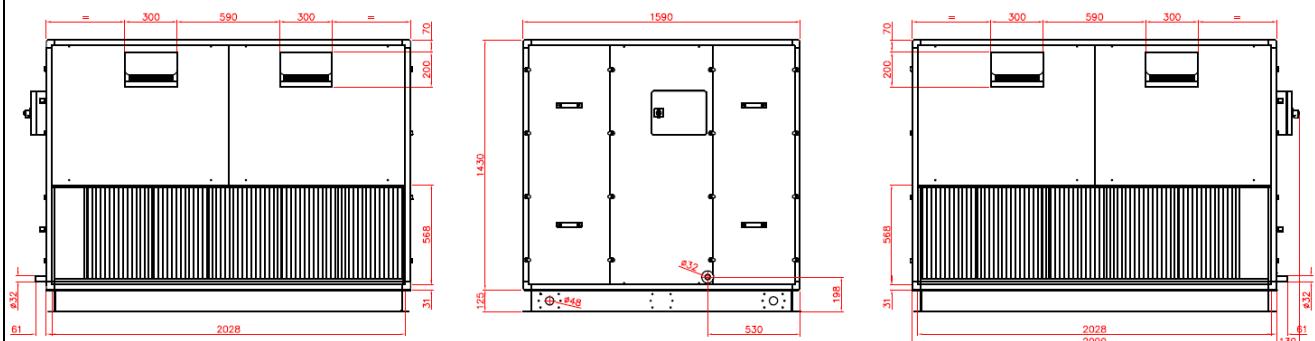
Fig.: maxi 2002

Design:



- 1 Main switch for power supply fans and control
- 2 Main switch for power supply to pre (Kwin) and/or post (Kwout) heating coils (options)
- 3 Centralized wiring box of the CB4 TAC4 DG circuit (factory pre-wired)
- 4 Supply fan(s)
- 5 Exhaust fan(s)
- 6 Post-heating water or electrical coil (NV ou KWout option)
- 7 Motorized damper at fresh air inlet (CT option)
- 8 F7 class filter at fresh air inlet
- 9 Pre-heating electrical antifreeze coil (KWin option)
- 10 Drain pan and drain
- 11 By-pass 100%
- 12 Air/air – heat exchanger
- 13 G4 filter on exhaust air
- 14 Motorized damper at exhaust air inlet (CT option)

Unit dimensions without pipe connections:



Maximum dimensions (LxWxH in mm): 1590x2220x1555

MVHR components:	
Heat exchanger:	Aluminum cross counterflow heat exchanger on slide rails
Fans:	EC direct current radial fans
Filters:	Filter class: intake air F7, extract air G4
Housing:	Housing frame: anodized aluminum hollow sections with reinforced PP corner joints 30 mm double wall panel construction: galvanized sheet metal inside, polyester coated steel outside, sound and heat insulation by 28 mm thick EPS boards (self-extinguishing, class M1). Outdoor installation of MVHR unit is possible; optionally, a hood can be obtained. All doors to fans and filters are equipped with handles. The MVHR unit is mounted on a base frame and has to be installed vertically on this frame.
Summer operation:	motorized summer bypass, temperature-controlled, heat exchanger is 100% shut off
Air connections: (components possible)	Intake air: suction hood with fixed-bar grille (with/without flap) or flap or canvas connection (with/without flap) Exhaust air: canvas connection or spigot joint or multileaf damper (self-closing) Supply air: canvas connection or spigot joint Extract air: canvas connection (with/without flap) or flap
Condensate drain:	Stainless steel drip pan with condensate drain connection Ø 20 mm and siphon
Electrical connection:	Fans and controlling devices: 3 x 400 V, 50/60 Hz; on main switch (pre-wired with centralized wiring box) Electric pre and backup duct heaters , optionally: 3 x 400 V +N, 50/60 Hz; separate main switch (pre-wired with main switch)
IP Code (acc. to DIN 40050):	IP 44 (fans) IP 20 (RC TAC4 REC)
Weight:	632 kg (Base unit without additional components)
Operating range:	-10 bis 55 °C (environmental conditions at the fan motor)

Operating Data:

Volume flow rate	Heat recovery ratio ¹⁾	Supply air temperature ¹⁾	max. pressure available		Power consumption ²⁾	Sound pressure level ²⁾ in distance of 3 m
			Supply air	Extract air		
m³/h	%	°C	Pa	Pa	W	dB(A)
2500	93,4	19,9	774	773	445	44,9
3000	92,8	19,7	698	695	686	48,0
4000	91,9	19,4	526	517	1384	52,7
5000	91,1	19,2	326	310	2415	56,5

¹⁾ Values for supply and extract air volume flow at $t_{Au} = -10$ °C, $\varphi_{Au} = 90$ % r.F. and $t_{Ab} = 22$ °C, $\varphi_{Ab} = 50$ % r.F.

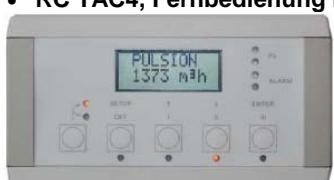
²⁾ at external pressure of 100 Pa

TAC4 control system:

- Fan airflow management (accurate knowledge of fan's working point)
- Management of time slots
- Automatic bypass control (freecooling)
- Heat exchanger anti-freeze protection control
- Automatic motorized inlet and exhaust damper control (option)
- Electrical pre-heater control (option)
- Water or electrical Post-heater (option)
- Control of external post-coil (option)
- RTU or TCP/IP MODBUS Communication (option)

The TAC4 control circuit is factory pre-wired.

Control options / communications:

<ul style="list-style-type: none"> • RC TAC4, Fernbedienung mit LCD-Display  <p>Size: 122 x 66 mm Cable to the control unit: IYSTY 2x2x0,6; max. 1000 m; by costumer</p>	<ul style="list-style-type: none"> • TCP/IP TAC4 module - Gateway for communication with building management systems (BMS) via MODBUS TCP/IP network • MODBUS RTU network - usually to connect to a BMS (without TCP/IP TAC4 module) 
<ul style="list-style-type: none"> • GRC TAC4 (graphic touchscreen display) - can control up 247 units  <p>Size: 152 x 87 mm Cable to the control unit: IYSTY 2x2x0,6 with RS-232-connector; 3 m</p>	<ul style="list-style-type: none"> • GPRS TAC4 modul - for a webserver type application, also allows GPRS communication 

Please note: For maintenance, a free space on the operating side of at least 60 cm is required! A distance of 50 cm is recommended for all three other sites!

Date: 18/06/2012

Subject to change in the interest
of technical progress.

Technical Data

Mechanical Ventilation Heat Recovery Unit maxi 6002

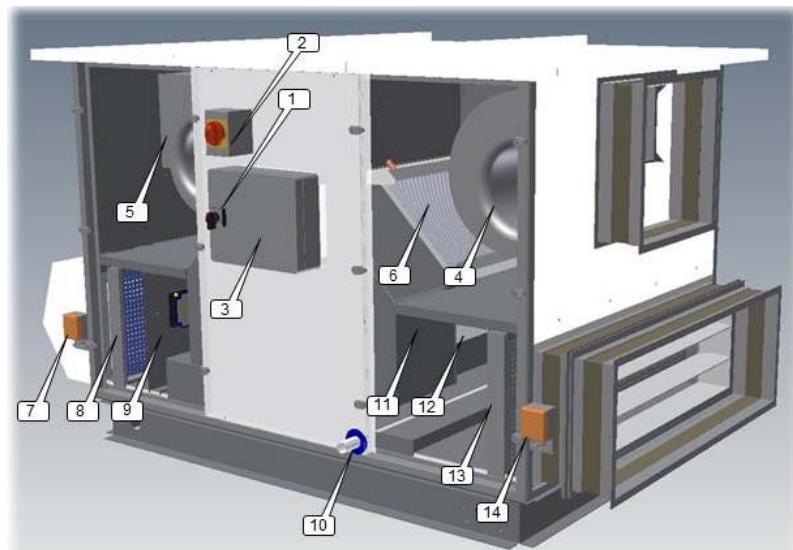


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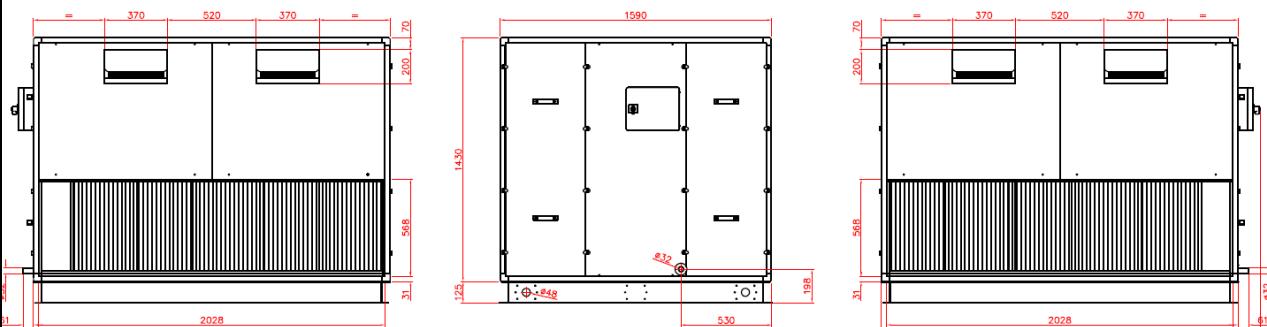
Fig.: maxi 2002

Design:



- 1 Main switch for power supply fans and control
- 2 Main switch for power supply to pre (Kwin) and/or post (Kwout) heating coils (options)
- 3 Centralized wiring box of the CB4 TAC4 DG circuit (factory pre-wired)
- 4 Supply fan(s)
- 5 Exhaust fan(s)
- 6 Post-heating water or electrical coil (NV ou KWout option)
- 7 Motorized damper at fresh air inlet (CT option)
- 8 F7 class filter at fresh air inlet
- 9 Pre-heating electrical antifreeze coil (KWin option)
- 10 Drain pan and drain
- 11 By-pass 100%
- 12 Air/air – heat exchanger
- 13 G4 filter on exhaust air
- 14 Motorized damper at exhaust air inlet (CT option)

Unit dimensions without pipe connections:



Maximum dimensions (LxWxH in mm): 1590x2220x1555

MVHR components:	
Heat exchanger:	Aluminum cross counterflow heat exchanger on slide rails
Fans:	EC direct current radial fans
Filters:	Filter class: intake air F7, extract air G4
Housing:	Housing frame: anodized aluminum hollow sections with reinforced PP corner joints 30 mm double wall panel construction: galvanized sheet metal inside, polyester coated steel outside, sound and heat insulation by 28 mm thick EPS boards (self-extinguishing, class M1). Outdoor installation of MVHR unit is possible; optionally, a hood can be obtained. All doors to fans and filters are equipped with handles. The MVHR unit is mounted on a base frame and has to be installed vertically on this frame.
Summer operation:	motorized summer bypass, temperature-controlled, heat exchanger is 100% shut off
Air connections: (components possible)	Intake air: suction hood with fixed-bar grille (with/without flap) or flap or canvas connection (with/without flap) Exhaust air: canvas connection or spigot joint or multileaf damper (self-closing) Supply air: canvas connection or spigot joint Extract air: canvas connection (with/without flap) or flap
Condensate drain:	Stainless steel drip pan with condensate drain connection Ø 20 mm and siphon
Electrical connection:	Fans and controlling devices: 3 x 400 V, 50/60 Hz; on main switch (pre-wired with centralized wiring box) Electric pre and backup duct heaters , optionally: 3 x 400 V +N, 50/60 Hz; separate main switch (pre-wired with main switch)
IP Code (acc. to DIN 40050):	IP 44 (fans) IP 20 (RC TAC4 REC)
Weight:	660 kg (Base unit without additional components)
Operating range:	-10 bis 55 °C (environmental conditions at the fan motor)

Operating Data:

Volume flow rate	Heat recovery ratio ¹⁾	Supply air temperature ¹⁾	max. pressure available		Power consumption ²⁾	Sound pressure level ²⁾ in distance of 3 m
			Supply air	Extract air		
m³/h	%	°C	Pa	Pa	W	dB(A)
3000	93,4	19,9	709	712	598	46,0
4000	92,5	19,6	579	578	1184	50,9
5000	91,7	19,4	440	436	2044	54,5
6000	91,1	19,2	308	299	3219	58,0

¹⁾ Values for supply and extract air volume flow at $t_{Au} = -10$ °C, $\varphi_{Au} = 90$ % r.F. and $t_{Ab} = 22$ °C, $\varphi_{Ab} = 50$ % r.F.

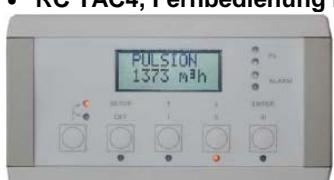
²⁾ at external pressure of 100 Pa

TAC4 control system:

- Fan airflow management (accurate knowledge of fan's working point)
- Management of time slots
- Automatic bypass control (freecooling)
- Heat exchanger anti-freeze protection control
- Automatic motorized inlet and exhaust damper control (option)
- Electrical pre-heater control (option)
- Water or electrical Post-heater (option)
- Control of external post-coil (option)
- RTU or TCP/IP MODBUS Communication (option)

The TAC4 control circuit is factory pre-wired.

Control options / communications:

<ul style="list-style-type: none"> • RC TAC4, Fernbedienung mit LCD-Display  <p>Size: 122 x 66 mm Cable to the control unit: IYSTY 2x2x0,6; max. 1000 m; by costumer</p>	<ul style="list-style-type: none"> • TCP/IP TAC4 module - Gateway for communication with building management systems (BMS) via MODBUS TCP/IP network • MODBUS RTU network - usually to connect to a BMS (without TCP/IP TAC4 module) 
<ul style="list-style-type: none"> • GRC TAC4 (graphic touchscreen display) - can control up 247 units  <p>Size: 152 x 87 mm Cable to the control unit: IYSTY 2x2x0,6 with RS-232-connector; 3 m</p>	<ul style="list-style-type: none"> • GPRS TAC4 modul - for a webserver type application, also allows GPRS communication 

Please note: For maintenance, a free space on the operating side of at least 60 cm is required! A distance of 50 cm is recommended for all three other sites!

Date: 25.07.11Subject to change
in the interest of technical
progress.**Checklist A**
Maintenance by customer**Maintenance Work**

Enter date in the quarter

1. Change both filters in the MVHR unit (change every 90 days)

Quarter Year	I	II	III	IV
201...				
201...				
201...				
201...				
201...				
201...				
201...				
201...				
201...				

2. Clean extract air prefilter / filter in extract air valves (change approx. every 2 months)

Quarter Year	I	II	III	IV
201...				
201...				
201...				
201...				
201...				
201...				
201...				
201...				
201...				

Change prefilter in fresh air line (outdoor air intake - also at ground heat exchanger) – all 6-12 months

Quarter Year	I	II	III	IV
201...				
201...				
201...				
201...				
201...				
201...				
201...				
201...				
201...				

Simplified formula for determining the local heat recovery rate η

$$\eta = \frac{t_{Zu} - t_{Au}}{t_{Ab} - t_{Au}}$$

Legend: - intake air temperature
- extract air temperature
- supply air temperature**Note:**

Air temperatures are to be measured in nominal ventilation mode with volume flow balance and sensor arrangement acc. to DIN EN 308!

Date: 26.07.11Subject to change
in the interest of technical
progress.

Checklist B

Maintenance by skilled personnel

**Maintenance**

Enter result

- Inspection of MVHR unit acc. to DIN 1946-6 appendix E (normative) and appendix F (informatory)
- Hygiene check acc. to VDI 6022, item 5 and table 6
- Informal report for comments on MVHR unit's condition
- Use additional sheet of paper for adding reports of subsequent years

No.	Components	Action / Interval (in months) ¹⁾	Result	201...	201...	201...	201...	201...
1	Fan / MVHR unit	Components cleaned? (Heat exchangers, condensate pan, siphon, post heater, unit housing)	6	yes / no				
		Filter test, filter replacement	3 ¹⁾ 3-6 ²⁾	yes / no				
		Frost protection device functional?	6	yes / no				
		Structure-borne-noise transmission, fixings are avoided?	12 ²⁾	yes / no				
		Preheater / vaporizer / heat exchanger are not contaminated?	6	yes / no				
		Preheater / vaporizer / heat exchanger are cleaned?	6	yes / no				
		Status indicators are working?	12 ²⁾	yes / no				
2	Condensate drain and siphon	Working?	3	yes / no				
3	Electronic controls	Condensate disposal OK?	3	yes / no				
4	Air ducts / heat insulation	Cable connections and clamp fixing secure?	12 ²⁾	yes / no				
		Control units working?	12 ²⁾	yes / no				
		Inner duct surface tested for contamination	12	yes / no				
		Cleaning done (if required)?		yes / no				
5	Ground to air heat exchanger (if available)	Heat insulation and vapor barrier OK?	12 ²⁾	yes / no				
		Flexible connections between MVHR and air ducts OK?	12 ²⁾	yes / no				
		Air ducts OK?		yes / no				
		Changeover working?	12 ²⁾	yes / no				
		Outdoor air intake free?	12	yes / no				
		Condition of prefilter OK?	12	yes / no				
6	Fan / MVHR unit and fireplace operating mode (if available)	Filter changed?	12 ¹⁾ 6 ²⁾	yes / no				
		Condensate drain OK?	3	yes / no				
7	Other filters, filter condition	Corrosion OK?	3	yes / no				
		Safety device with firing installation working?	12 ²⁾	yes / no				
		Filters of correct filter class installed?	12 ²⁾	yes / no				
8	Extract air / supply air outlet	Filter changed?	3-12 ¹⁾	yes / no				
		Fit and lock OK?	12 ²⁾	yes / no				
		Filters of correct filter class installed?	12 ²⁾	yes / no				
9	Overflow air ducts	Filter, filter condition OK?	6 ²⁾	yes / no				
		Free cross-section?	12 ²⁾	yes / no				
		No structure-borne / airborne noise transmission?	12 ²⁾	yes / no				

¹⁾ Figures: Measure interval in months acc. VDI 6022²⁾ Action / interval in months – indication acc. Paul Wärmerückgewinnung GmbH

Date: 26.07.11

Subject to change in the
interest of technical progress.

Commissioning and handover certificate

**Completeness and performance verifications
acc. to DIN 1946-6**



Customer data

Surname:	First name:	Tel:
Street:	ZIP:	Town:
Construction project:		
MVHR-type:	Serial-No.:	Built:

Completeness

No.	Device	Ausführung	Result
1	Supply air duct	- Version as planned - Cleaning possible	yes / no yes / no
2	Supply air outlets	- Configuration as planned - Version as planned - Cleaning possible - sufficient distance from the	yes / no yes / no yes / no yes / no
3	Overflow air outlets	- Configuration as planned - Version as planned	yes / no yes / no
4	Extract air outlets	- Configuration as planned - Version as planned - Cleaning possible - Pre-filter provided as planned?	yes / no yes / no yes / no yes / no
5	Extract air duct	- Cleaning possible	yes / no
6	Extract air fan	- Cleaning possible	yes / no
7	Control unit	- working?	yes / no
8	Filters, optional	- Possibility to change - or clean	yes / no
9	Heat exchanger for heat recovery	- Cleaning possible	yes / no
10	Extract air heat pump, optional	- Cleaning possible	yes / no
11	Condensate drain, optional	- working?	yes / no
12	Ground to air heat exchanger, optional	- Cleaning possible	yes / no
13	Duct heater, optional	- Cleaning possible	yes / no
14	Solar panel	- Cleaning possible	yes / no
15	Documentation / manual	- available	yes / no

Function

1	Ready to use in standard mode (nominal ventilation), as planned	Result OK further steps necessary	yes / no yes / no
2	Different modes possible, as planned	Result OK further steps necessary	yes / no yes / no
3	Power consumption	Result OK further steps necessary	yes / no yes / no

Confirmation

Date: Signature/Stamp:.....

Startup personnel / Plumber

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CE DECLARATION OF CONFORMITY

Product description: Mechanical ventilation heat recovery (MVHR) unit	maxi 802, maxi 1202, maxi 2002, maxi 3002, maxi 4002, maxi 5002, maxi 6002
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Complies the Directives:

Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC

Applied standards:

- EN 61000-6-1 Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments
- EN 61000-6-3 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
- EN 55011 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement

Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast)

Applied standards:

- EN ISO 12100-1 Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology
- EN ISO 3744 Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane
- EN ISO 5136 Acoustics - Determination of sound power radiated into a duct by fans and other air-moving devices - Induct method

Directive 2006/42/EC of the European Parliament and of the Council of 12 December 2006 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits

Applied standards:

- EN 60730-1 Automatic electrical controls for household and similar use - Part 1: General requirements
- EN 60730-2-15 Automatic electrical controls for household and similar use - Part 2-15: Particular requirements for automatic electrical air flow, water flow and water level sensing controls

Reinsdorf, 27th of August 2012

Paul Wärmerückgewinnung GmbH

A handwritten signature in black ink, appearing to read "Michael Pitsch".

Michael Pitsch
CEO